



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

**MEMORANDUM:**

DATE: August 31, 2000

SUBJECT: Office of Pesticide Programs List of Chemicals Evaluated for Carcinogenic Potential

FROM: William L. Burnam, Chief  
Science Analysis Branch  
Health Effects Division (7509C)

A handwritten signature in black ink, appearing to read "WLBurnam", is written over the typed name of William L. Burnam.

TO: Division Director HED, RD, SRRD and EFED  
Associate Directors, HED  
Branch Chiefs, HED

The attached list provides a quick overview of compounds evaluated for carcinogenicity by the Health Effects Division (HED) of the Office of Pesticide Programs (OPP). Chemicals evaluated by other review groups are listed as well and HED looks to these evaluations until an internal HED evaluation has been performed. Since the evaluation of many of these chemicals is an ongoing process, the information on this list may change and become out of date, i.e., the classification and  $Q_1^*$  may change. Therefore, the list should not be used as the sole reference, without checking on the present status of a compound. Updated lists will be distributed in the future on a semi-annual basis.

Unless otherwise indicated, the classification of chemicals is based on the HED carcinogenicity peer review process or the HED hazard identification assessment review process, applying the Agency guidelines for carcinogenicity assessment. Evaluations by other groups are indicated by their acronyms: Cancer Assessment Group (CAG), Carcinogen Risk Assessment Verification Endeavor (CRAVE) and Office of Research and Development, U.S. EPA (ORD). For those chemicals where different groups suggested different classifications, the "final" OPP classification is listed under the column "Current OPP Classification and Date of Classification." The Potency ( $Q_1^*$ ), unless otherwise indicated, is based on the oral route. The units for the oral and inhalation  $Q_1^*$  are  $(\text{mg/kg/day})^{-1}$  and  $(\mu\text{g/cu.m})^{-1}$ , respectively.

If any corrections are necessary or further information is required please contact Rick Whiting (Phone: 703-305-5473; Email: [whiting.rick@epa.gov](mailto:whiting.rick@epa.gov)) or myself (Phone: 703-305-6193; Email: [burnam.william@epa.gov](mailto:burnam.william@epa.gov)).

**1986 EPA WEIGHT-OF-THE EVIDENCE CATEGORIES**  
**(Federal Register / Vol. 51, No. 185 / September, 24 1986)**

Group A – Human Carcinogen	This group is used only when there is sufficient evidence from epidemiologic studies to support a casual association between exposure to the agents and cancer.
Group B – Probable Human Carcinogen	This group includes agents for which the weight of the evidence of human carcinogenicity based on epidemiologic studies is “limited” and also includes agents for which the weight of the evidence of carcinogenicity based on animal studies is “sufficient.” The group is divided into tow subgroups. Usually, Group B1 is reserved for agents for which there is limited evidence from epidemiologic studies. It is reasonable, for practical purposes, to regard an agent for which there is “sufficient” evidence of carcinogenicity in animals as if it presented a carcinogenic risk to humans. Therefore, agents for which there is “sufficient” evidence from animal studies and for which there is “inadequate evidence” or “no data” from epidemiologic studies would usually be categorized under Group B2.
Group C – Possible Human Carcinogen	This group is used for agents with limited evidence of carcinogenicity in animals in the absence of human data. It includes a wide variety of evidence, e.g., (a) a malignant tumor response in a single well-conducted experiment that does not meet conditions for sufficient evidence, (b) tumor responses of marginal statistical significance in studies having inadequate design or reporting, (c) benign but not malignant tumors with an agent showing no response in a variety of short-term tests for mutagenicity, and (d) responses of marginal statistical significance in a tissue known to have a high or variable background rate.
Group D – Not classifiable as to Human Carcinogenicity	This group is used for agents with inadequate human and animal evidence of carcinogenicity or for which no data are available.
Group E – Evidence of Non-Carcinogenicity for Humans	<p>This group is used for agents that show no evidence for carcinogenicity in at least two animal tests in different species or in both adequate epidemiologic and animal studies.</p> <p>The designation of an agent as being in Group E is based on the available evidence and should not be interpreted as a definitive conclusion that the agent will not be a carcinogen under any circumstances.</p>

## 1996 PROPOSED EPA WEIGHT-OF-THE EVIDENCE CATEGORIES

(<http://www.epa.gov/ORD/WebPubs/carcinogen/>)

Known/Likely	<p>This category of descriptors is appropriate when the available tumor effects and other key data are adequate to convincingly demonstrate carcinogenic potential for humans; it includes:</p> <ul style="list-style-type: none"> <li>• Agents known to be carcinogenic in humans based on either epidemiologic evidence of a combination of epidemiologic and experimental evidence, demonstrating causality between human exposure and cancer,</li> <li>• Agents that should be treated as if they were known human carcinogens, based on a combination of epidemiologic data showing a plausible causal association (not demonstrating it definitively) and strong experimental evidence.</li> <li>• Agents that are likely to produce cancer in humans due to the production or anticipated production of tumors by modes of action that are relevant or assumed to be relevant to human carcinogenicity.</li> </ul> <p>Modifying descriptors for particularly high or low ranking in the "known/likely" group can be applied based on scientific judgement and experience and are as follows:</p> <ul style="list-style-type: none"> <li>• agents that are likely to produce cancer in humans based on data that are at the high end of the weights of evidence typical of this group,</li> <li>• agents that are likely to produce cancer in humans based on data that are at the low end of the weights of evidence typical of this group.</li> </ul>
Cannot be determined	<p>This category of descriptors is appropriate when available tumor effects or other key data are suggestive or conflicting or limited in quantity and, thus, are not adequate to convincingly demonstrate carcinogenic potential for humans. In general, further agent specific and generic research and testing are needed to be able to describe human carcinogenic potential. The descriptor cannot be determined is used with a subdescriptor that captures the rationale:</p> <ul style="list-style-type: none"> <li>• agents whose carcinogenic potential cannot be determined, but for which there is suggestive evidence that raises concern for carcinogenic effects,</li> <li>• agents whose carcinogenic potential cannot be determined because the existing evidence is composed of conflicting data (e.g., some evidence is suggestive of carcinogenic effects, but other equally pertinent evidence does not confirm any concern), agents whose carcinogenic potential cannot be determined because there are inadequate data to perform an assessment,</li> <li>• agents whose carcinogenic potential cannot be determined because no data are available to perform an assessment.</li> </ul>
Not likely	<p>This is the appropriate descriptor when experimental evidence is satisfactory for deciding that there is no basis for human hazard concern, as follows (in the absence of human data suggesting a potential for cancer effects):</p> <ul style="list-style-type: none"> <li>• agents not likely to be carcinogenic to humans because they have been evaluated in at least two well conducted studies in two appropriate animal species without demonstrating carcinogenic effects,</li> <li>• agents not likely to be carcinogenic to humans because they have been appropriately evaluated in animals and show only carcinogenic effects that have</li> </ul>

	<p>been shown not to be relevant to humans (e.g., showing only effects in the male rat kidney due to accumulation of alpha<sub>2u</sub>-globulin),</p> <ul style="list-style-type: none"> <li>• agents not likely to be carcinogenic to humans when carcinogenicity is dose or route dependent. For instance, not likely below a certain dose range (categorized as likely by another route of exposure). To qualify, agents will have been appropriately evaluated in animal studies and the only effects show a dose range or route limitation or a route limitation is otherwise shown by empirical data,</li> <li>• agents not likely to be carcinogenic to humans based on extensive human experience that demonstrates lack of effect (e.g., phenobarbital).</li> </ul>
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**1999 DRAFT EPA WEIGHT-OF-THE EVIDENCE CATEGORIES**  
**(<http://www.epa.gov/ncea/raf/car2sab/preamble.pdf>)**

Carcinogenic to humans	<p>This descriptor is appropriate when there is convincing epidemiologic evidence demonstrating causality between human exposure and cancer.</p> <p>This descriptor is also appropriate when there is an absence of conclusive epidemiologic evidence to clearly establish a cause and effect relationship between human exposure and cancer, but there is compelling evidence of carcinogenicity in animals and mechanistic information in animals and humans demonstrating similar mode(s) of carcinogenic action. It is used when all of the following conditions are met:</p> <ul style="list-style-type: none"> <li>• There is evidence in a human population(s) of association of exposure to the agent with cancer, but not enough to show a causal association, and</li> <li>• There is extensive evidence of carcinogenicity, and</li> <li>• The mode(s) of carcinogenic action and associated key events have been identified in animals, and</li> <li>• The key events that precede the cancer response in animals have been observed in the human population(s) that also shows evidence of an association of exposure to the agent with cancer</li> </ul>
Likely to be carcinogenic to humans	<p>This descriptor is appropriate when the available tumor effects other key data are adequate to demonstrate carcinogenic potential to humans. Adequate data are within a spectrum. At one end is evidence for an association between human exposure to the agent and cancer and strong experimental evidence of carcinogenicity in animals; at the other, with no human data, the weight of experimental evidence shows animal carcinogenicity by a mode or modes of action that are relevant or assumed to be relevant to humans.</p>
Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential	<p>This descriptor is appropriate when the evidence from human or animal data is suggestive of carcinogenicity, which raises a concern for carcinogenic effects but is judged not sufficient for a conclusion as to human carcinogenic potential. Examples of such evidence may include; a marginal increase in tumors that may be exposure-related, or evidence is observed only in a single study, or the only evidence is limited to certain high background tumors in one sex of one species. Dose-response assessment is not indicated for these agents. Further studies would be needed to determine human carcinogenic potential.</p>
Data are inadequate for an assessment of human carcinogenic potential	<p>This descriptor is used when available data are judged inadequate to perform an assessment. This includes a case when there is a lack of pertinent or useful data or when existing evidence is conflicting, e.g., some evidence is suggestive of carcinogenic effects, but other equally pertinent evidence does not confirm a concern.</p>
Not likely to be carcinogenic to humans	<p>This descriptor is used when the available data are considered robust for deciding that there is no basis for human hazard concern. The judgement may be based on:</p> <ul style="list-style-type: none"> <li>• Extensive human experience that demonstrates lack of carcinogenic effect (e.g., phenobarbital)</li> </ul>

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|  | <ul style="list-style-type: none"><li>• Animal evidence that demonstrates lack of carcinogenic effect in at least two well-designed and well conducted studies in two appropriate animal species (in the absence of human data suggesting a potential for cancer effects).</li><li>• Extensive experimental evidence showing that the only carcinogenic effects observed in animals are not considered relevant to humans (e.g., showing only effects in the male rat kidney due to accumulation of <math>\alpha</math>2u-globulin).</li><li>• Evidence that carcinogenic effects are not likely by a particular route of exposure.</li><li>• Evidence that carcinogenic effects are not anticipated below a defined dose range.</li></ul> |
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## ACRONYMS

2/3, 3/4	This scaling factor converts the unit risk from animals to humans. The $\frac{3}{4}$ 's (2/3) scaling factor could be defined as mg chemical per kg animal body weight raised to the 3/4's per day cross-species scaling factor. It would be written as: mg chemical/kg animal body weight $^{\frac{3}{4}}$ day. The 3/4's scaling factor is now used instead of the 2/3.
CAG	Cancer Assessment Group
CARC	Cancer Assessment Review Committee (replaced HCPRC)
CRAVE	Carcinogen Risk Assessment Verification Endeavor
Date of Classification	The stamp date of the final OPP document. For CAG, CRAVE or IRIS the data represents when the document was listed on IRIS.
Def. or Defer	Deferred
F	Female(s)
HCPRC	Health Effects Division Carcinogenicity Peer Review Committee
HAZID or HIARC	Hazard Identification Assessment Review Committee (replaced RFDC)
HED	Health Effects Division
(I)	Inhalation $Q_1^*$ ( $\mu\text{g}/\text{cu.m}$ ) $^{-1}$
Int.	Interim
IRIS	Integrated Risk Information System ( <a href="http://www.epa.gov/iris/">http://www.epa.gov/iris/</a> )
M	Male(s)
MOE	Margin of Exposure
(O)	Oral $Q_1^*$ (mg/kg/day) $^{-1}$
OHEA	Office of Health and Environmental Assessment, Office of Research and Development
OPP	Office of Pesticide Programs
ORD	Office of Research and Development
$Q_1^*$ , $Q^*$ or (q)	Cancer Potency $Q_1^*$ value [Oral - (mg/kg/day) $^{-1}$ and Inhalation ( $\mu\text{g}/\text{cu.m}$ ) $^{-1}$ ]
RFDC	Health Effects Division Reference Dose/Peer Review Committee
SAB	Scientific Advisory Board
SAP	FIFRA Scientific Advisory Panel

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
2,4-D CAS No. 94-75-7 EPA Chem Code: 030001	D (1/29/97)	Brain astrocytomas; F344/CRl-Br rats (M)		
Comments: [Syn. 2,4-Dichlorophenoxyacetic acid]. CPRC agreed that the Registrant should be required to provide additional histopathology data to include all animals in the low and mid-doses in both the male rat brain and male mouse spleen. A better characterization of the impurities in the test materials used in both the original and the new studies, might also be helpful to explain the conflicting results (ie, astrocytomas in male rats).				
2-Benzyl-4-chlorophenol CAS No. 120-32-1 EPA Chem Code: 062201	C (9/5/95)	Renal tubule combined adenomas/carcinomas; B6C3F1 mice (M). Renal transitional cell carcinomas; F344/N rats (F)		
Comments: [Syn. OBCP, o-Benzyl-p-chlorophenol]				
AC 263222 (Cadre herbicide) CAS No. 81334-60-3 EPA Chem Code: 129041	E (9/27/95)			
Comments: Studies were conducted using the free acid form of AC 263222. The PC Code & CASRN for the ammonium salt are 128943 & 104098-49-9, respectively.				
AC 299,263 CAS No. 11431-32-9 EPA Chem Code: 129171	Not Likely (2/27/97)			
Acephate CAS No. 30560-19-1 EPA Chem Code: 103301	C (5/8/85)	Hepatocellular carcinomas; CD-1 mice (F)		C
Comments: CRAVE Q* = 8.7 E-3 (0).				
Acetaldehyde CAS No. 75-07-0 EPA Chem Code: 202300	B2 (CRAVE) (1/13/88)	Nasal tumors; SPF Wistar rats (M & F). Laryngeal tumors; Syrian Golden hamsters (M & F).	2.2 E-6 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Acetamide CAS No. 60-35-5 EPA Chem Code:	C (5/29/90)	Liver tumors; Wistar rats (M); F344 rats (M & F).		
Comments: HCPRC considered whether or not to quantify the risk for Acetamide, and concluded that the data were not suitable for quantitative risk assessment because of deficiencies in the individual studies. Acetamide (not itself a pesticide) is a metabolite of pesticides Methomyl & Thiodicarb.				
Acetochlor CAS No. 34256-82-1 EPA Chem Code: 121601	B2 (1/27/92)	Nasal epithelium adenomas, thyroid cell adenoma, benign chondra of femur, basal cell tumor of stomach; CD rats (M & F). Pulmonary adenomas (M & F); liver tumors (M); CD-1 mice.	1.69 E-2 (2/3)	Pending



CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Acetone CAS No. 67-64-1 EPA Chem Code: 044101	D (CRAVE) (12/6/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Acetophenone CAS No. 98-86-2 EPA Chem Code: 129033	D (CRAVE) (11/7/90)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Acibenzolar-S-methyl CAS No. 135158-54-2 EPA Chem Code: 061402	Not likely to be carcinogenic to humans (12/9/99)			
Comments: Classification is based on the lack of evidence of carcinogenicity in mice and rats and on the lack of unequivocal genotoxicity in an acceptable battery of mutagenicity studies performed on the current technical grade product.				
Acifluorfen, sodium CAS No. 62476-59-9 EPA Chem Code: 114402	B2 (3/17/88)	Liver; B6C3F1 & CD-1 mice (M & F). Stomach papillomas; B6C3F mice (M & F).	1.07 E-1 (2/3)	Pending
Comments: [Syn. Tackle & Blazer]				
Acrinathrin CAS No. 101007-06-1 EPA Chem Code: 129141	D (7/15/96)			
Comments: RFDC concluded that dose selection in the 2-year rat study was inadequate.				
Acrolein CAS No. 107-02-8 EPA Chem Code: 000701	C (CRAVE) (12/2/87)	Adrenal cortical adenomas; Fischer 344 rats (F).		C
Comments: Classification is also based on carcinogenic potential of metabolite, Glycidaldehyde. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Acrylamide CAS No. 79-06-1 EPA Chem Code: 600008	B2 (CRAVE) (5/25/88)	Benign &/or malignant tumors at multiple sites in M & F rats (F344), & carcinogenic effects in a series of 1-year limited bioassays in mice (SENCAR, Swiss-ICR & A/J strains) by several routes of exposures.	4.5 E+0 (0) 1.3 E-3 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Acrylonitrile CAS No. 107-13-1 EPA Chem Code: 000601	B1 (CRAVE) (2/11/87)	Significant increase in incidence of lung cancer in exposed workers & observation of tumors, generally astrocytomas in the brain, in 2 rat strains exposed by various routes (water, gavage, inhalation).	5.4 E-1 (0) 6.8 E-5 (1)	B1
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Alachlor CAS No. 15972-60-8 EPA Chem Code: 090501	Likely (high doses); Not likely (low doses) (6/27/97)	Increased incidences of malignant & combined benign/malignant multi- ple tumor types in both sexes; Long Evans rat		
Comments: HCPRC recommended that a non-linear MOE approach be used for the purpose of risk assessment. The consensus of the HCPRC was that MOEs for both the malignant mixed gastric tumors and the nasal adenomas be presented for a risk management decision.				
Aldicarb (Temik) CAS No. 116-06-3 EPA Chem Code: 098301	E (OPP) (9/15/98) D (CRAVE) (8/26/87)			D
Comments: CRAVE assessment is located on IRIS.				
Aldrin CAS No. 309-00-2 EPA Chem Code: 045101	B2 (CRAVE) (3/22/87)	Liver carcinomas; C3HeB/Fe mice (M & F); Hepatic hyperplasia & benign hepatomas; C3H mice (M & F); Hepatocellular carcinomas; B6C3F1 mice (M).	1.7 E+1 (0) 4.9 E-3 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Aminopyridine, 4- CAS No. 504-24-5 EPA Chem Code: 069203	D (CRAVE) (5/30/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Amitraz (Baam) CAS No. 33089-61-1 EPA Chem Code: 106201	C(q) (10/31/90)	Lymphoreticular tumors; CFLP mice (F). Hepatocellular adenomas, carcinomas & adenomas/carcinomas combined; B6C3F1 mice (F); Lung adenomas; B6C3F1 mice (M).	4.97 E-2 (2/3)	
Amitrole CAS No. 61-82-5 EPA Chem Code: 004401	B2 (11/30/92)	Thyroid (malignant & benign tumors); Charworth Farms, Fischer 344 & Wistar rats (M & F). Liver (malignant & benign tumors); B6C3F1 & NMRI mice (M & F).	1.13 E+0	
Aniline CAS No. 62-53-3 EPA Chem Code: 251400	B2 (CRAVE) (6/3/87)	Induction of tumors of the spleen and the body cavity in 2 strains of rat (CD-F & Fischer 344).	5.7 E-3	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Aramite CAS No. 140-57-8 EPA Chem Code: 062501	B2 (CRAVE) (1/10/91)	Liver tumors &/or neoplastic nodules in three strains of M & F rats (FDRL, CFN & Osborne-Mendel) & M of one strain of mice (C57BL/6XC3H/Anf)F1. Extrahepatic biliary system tumors in dogs (mongrel).	2.5 E-2 (0) 7.1 E-6 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Assert (with 128841) CAS No. 69969-22-8 EPA Chem Code: 128843	D (6/11/87)	Positive trend for hemangiomas/hemangiosarcomas in CD-1 mice (M).		Deferred
Comments: Although Assert was classified as a Category D oncogen, the rodent carcinogenicity studies were of good quality and it was recommended that they not be repeated.				
Asulam CAS No. 3337-71-1 EPA Chem Code: 106901	C (2/17/88)	Malignant thyroid C-cell tumors; Benign adrenal pheochromocytomas; Sprague-Dawley rats (M).		
Atrazine CAS No. 1912-24-9 EPA Chem Code: 080803	C(q) (4/27/89)	Mammary tumors; Sprague-Dawley rats (F).	1.12 E-1 (3/4)	Pending
Comments: New carcinogenicity classification pending.				
Avermectin B1 CAS No. 65195-55-3 EPA Chem Code: 122804	E (6/27/96)			
Azafenidin CAS No. 68049-83-2 EPA Chem Code: 119016	Data are inadequate for an assessment of human carcinogenic potential (10/18/99)			
Comments: Some of the CARC members considered the rat thyroid tumors to be treatment-related whereas an equal number of the CARC did not consider these tumors treatment-related. Thus under the Agency's Draft Cancer Risk Assessment Guidelines (July, 1999), the second group thought that the overall classification was "Not likely to be carcinogenic to humans." After some discussion, the CARC agreed that the consensus classification should be into the "Data are inadequate" category but no additional cancer studies were needed nor would there be any quantification of human cancer risk. However, the CARC recommended that an in vivo mouse micronucleus assay be conducted because of the observed effects on the hematopoietic system.				
Azinphos-methyl (Guthion) CAS No. 86-50-0 EPA Chem Code: 058001	Not likely (4/20/98)			
Comments: Repeat of rat carcinogenicity study is requested.				
Azobenzene CAS No. 103-33-3 EPA Chem Code: 007401	B2 (CRAVE) (2/3/88)	Invasive sarcomas in the spleen & other abdominal organs; F344 rats (M & F).	1.1 E-1 (0) 3.1 E-5 (1)	B2
Comments: Azobenzene is genotoxic & may be converted to benzidine, a known human carcinogen, under the acidic conditions in the stomach. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Azoxystrobin CAS No. 131860-33-8 EPA Chem Code: 128810	Not Likely (1/14/97)			

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRATE CLASS
Bardac 22 (also 2250, 2280) CAS No. 7173-51-5 EPA Chem Code: 069149	E (8/30/94)			
Baygon (Propoxur) CAS No. 114-26-1 EPA Chem Code: 047802	B2 (6/17/96)	Bladder carcinomas (rare), papillomas & combined combined carcinoma/ papilloma (M&F); Wistar rats. Statistically significant increases in hepatocellular adenomas & adenomas & combined adenoma/carcinoma; B6C3F1 mice (M).	3.69 E-3 (3/4)	Pending
Comments: HCPRC recommended the low dose extrapolation (Q1*) model applied to the animal data be used for the quantification of human risk.				
Bendiocarb CAS No. 22781-23-3 EPA Chem Code: 105201	Not likely (12/16/97)			
Benomyl CAS No. 17804-35-2 EPA Chem Code: 099101	C(q) (4/7/89)	Liver tumors (hepatocellular adenomas & carcinomas) in 2 genetically related strains of mice (CD-1 & Swiss SPF) (M & F)	2.39 E-3 (3/4)	
Comments: Benomyl rapidly hydrolyses to MBC in an aqueous environment. MBC also appears to be the initial metabolite in mammalian systems. MBC has similar or increased toxicity, both acute & chronic, to Benomyl.				
Benoxacor CAS No. 98730-04-2 EPA Chem Code: 911508	Cannot be determined, but suggestive (7/22/97)	Increases in glandular stomach (forestomach) tumors in both sexes of mice and rats; CD-1 & Sprague-Dawley rats		
Comments: HCPRC recommended that for risk assessment purposes, an MOE approach should be used based on the most sensitive precursor stomach lesion.				
Bensulide CAS No. 741-58-2 EPA Chem Code: 009801	Not likely (6/10/99)			
Bentazon (Basagran) CAS No. 25057-89-0 EPA Chem Code: 275200	E (11/10/93)			
Benzene CAS No. 71-43-2 EPA Chem Code: 008801	Known human carcinogen (1/19/00) (IRIS)	Acute nonlymphocytic leukemia (ANLL), suggestive evidence for chron- ic nonlymphocytic leukemia (CNLL) & chronic lymphocytic leukemia (CLL) Other neoplastic conditions associated with an incr risk in humans are hematologic neoplasms, blood disorders (preleukemia & aplastic anemia), Hodgkin's lymphoma & myelodysplastic syndrome (MDS).	1.5 E-2 to 5.5 E-2 2.2 E-6 to 7.8 E-6	Known
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. Human data are supported by animals studies. The experimental animal data add to the argument that exposure to benzene increases the risk of cancer in multiple species at multiple organ sites (hematopoietic, oral & nasal, liver, forestomach, preputial gland, lung, ovary & mammary gland). The oral slope factor as reported in IRIS is $1.5 \times 10^{-2}$ to $5.5 \times 10^{-2}$ per (mg/kg/day). The inhalation risk estimate is reported as a range, from $2.2 \times 10^{-6}$ to $7.8 \times 10^{-6}$ per ug/cu.m.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Benzoic acid CAS No. 65-85-0 EPA Chem Code: 009101	D (CRAVE) (3/1/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Bifenthrin (Talstar) CAS No. 82657-04-3 EPA Chem Code: 128825	C (4/29/92)	Hemangiopericytomas in the urinary bladder; Hepatocellular carcinomas & combined hepatocellular adenomas & carcinomas; Swiss Webster mice (M)		Deferred
Comments: HCPRC recommended that for the purpose of risk characterization, the Reference Dose (RfD) approach should be used for quantification of human risk.				
Biphenyl, 1,1- CAS No. 92-52-4 EPA Chem Code: 017002	D (CRAVE) (12/6/90)			D
Comments: Assessment based on the lack data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Bis(chloroethyl)ether (BCEE) CAS No. 111-14-4 EPA Chem Code: 029501	B2 (CRAVE) (7/23/86)	Increased evidence of hepatomas; (C57B1/6 x C3H/Anf)F1 mice (M & F) and (C57B1/6 x AKR)F1 mice (M).	1.1 E+0 (O) 3.3 E-4 (I)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. Dichloroethyl]				
Borax CAS No. 1303-96-4 EPA Chem Code: 011102	E (11/24/93)			
Boric acid CAS No. 10043-35-3 EPA Chem Code: 011001	E (11/24/93)			
Boron CAS No. 7440-42-8 EPA Chem Code: 128945	E (11/24/93)			
Bromacil CAS No. 314-40-9 EPA Chem Code: 012301	C (1/13/93)	Liver tumors (carcinomas & combined adenomas/carcinomas); CD-1 mice (M). Thyroic tumors (C-cell adenomas & follicular cell combined adenomas/carcinomas); Crl:CD (BR) rats (M).		
Comments: HCPRC recommended that for the purpose of risk characterization, the Reference Dose (RfD) approach should be used for quantification of human risk.				
Bromotrichloromethane CAS No. 75-62-7 EPA Chem Code: 008708	D (CRAVE) (1/10/91)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Bromoxynil CAS No. 1689-84-5 EPA Chem Code: 035301	C(q) (3/12/97)	Statistically significant increases in hepatocellular adenomas and/or carcinomas and combined adenomas/carcinomas; CD-1 mice (M & F).	1.03 E-1 (3/4)	
Bromuconazole CAS No. 116255-48-2 EPA Chem Code: 120503	E (4/24/95)			
Bronopol CAS No. 52-51-7 EPA Chem Code: 216400	E (6/16/95)			
Buprofezin CAS No. 69327-76-0 EPA Chem Code: 275100	Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential (3/15/00)	Significant increase by pair-wise comparison w/the controls for combined hepatocellular adenomas/carcinomas in females; CD-1 mice		
Comments: The Committee recommended that no quantification is required because the evidence was limited to one sex of one species.				
Butachlor (Machete) CAS No. 23184-66-9 EPA Chem Code: 112301	Likely (2/26/99)	Multiple tumors in multiple sites in Sprague-Dawley rats including rare stomach tumors in F, rare kidney tumors in M & F, as well as tumors of the nasal mucosa and thyroid glands in M & F.		
Comments: For the linear low-dose (Q1*) approach, extrapolation of risk should be based on the occurrence of renal cortical cell tumors in both sexes of rats at all dose levels tested. For the non-linear, margin of exposure (MOE) approach, extrapolation of risk should be based on the stomach, nasal and thyroid tumors in rats.				
Butylate (Sutan) CAS No. 2008-41-5 EPA Chem Code: 041405	E (11/25/92)			
Cacodylic acid CAS No. 75-60-5 EPA Chem Code: 012501	B2 (7/27/94)	Urinary bladder tumor; Fischer 344 rats (M & F). Fibrosarcomas (multiple organs); B6C3F1 mice (F).	6.23 E-2 (3/4)	D (1991)
Cadmium CAS No. 7440-43-9 EPA Chem Code:	B1 (CRAVE)(11/12/86)	Limited evidence from occupational epidemiologic studies. Evidence of carcinogenicity in rats mice by inhalation and intramuscular & subcutaneous injection.	1.8 E-3 (1)	B1
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Cadusafos (Ebufos/Rugby) CAS No. 95465-99-9 EPA Chem Code: 128864	E (5/28/92)			
Captafol CAS No. 2939-80-2 EPA Chem Code: 081701	B2 (5/19/89)	Lymphosarcomas & hemangiosarcomas (M & F), harderian gland adenomas (M) CD-1 mice. Mammary fibroadenoma (M & F), renal adenomas/carcinomas (combined) (M); Sprague-Dawley rats (M).	5.1 E-2 (2/3)	

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Captan CAS No. 133-06-2 EPA Chem Code: 081301	B2 (7/20/88)	Renal cortical/tubular cell neoplasms; CD rats (M); Uterine sarcomas Wistar rats (F). Intestinal tumors (M & F); B6C3F1, ICR CD-1 & CR CD-1 mice.	2.4 E-3 (3/4)	Pending
Carbaryl CAS No. 63-25-2 EPA Chem Code: 056801	C(q) (10/5/98)	Hemangiosarcomas (malignant vascular tumors) & combined hemangiomas/hemangiosarcomas; CRL:CD-1 (ICR)BR mice (M).	1.19 E-2 (3/4)	
Comments: Carbaryl also induced tumors at multiple organ sites in mice & rats but at dose levels considered to be excessively toxic for carcinogenicity testing. There was much discussion regarding the method of quantitation with the use of a low dose extrapolation (Q1*) approach and a MOE approach for quantification of human cancer risk; HCPRC agreed that both approaches be presented. In addition, an RfD approach would be provided to assess the most sensitive non-cancer health end-point for comparison to the linear and MOE approaches.				
Carbofuran CAS No. 1463-66-2 EPA Chem Code: 090601	Not likely (6/17/97)			
Carbon tetrachloride CAS No. 56-23-5 EPA Chem Code: 016501	B2 (CRAVE) (12/4/86)	Hepatocellular carcinomas; Osborne-Mendel, Japanese & Wistar rats; B6C3F1, C3H, A, Y, C and L mice; Syrian golden hamsters.	1.3 E-1 (0) 1.5 E-5 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Carfentrazone-ethyl CAS No. 128639-02-1 EPA Chem Code: 128712	Not likely (3/24/98)			
Chloramben CAS No. 133-90-4 EPA Chem Code: 029901	Deferred			
Comments: HCPRC requested reviewer to re-tabulate data for both NCI studies; including data for pooled controls & results of the data audit; historical controls are also required. Rereview 1979 rat study & 1978 mouse study.				
Chlordane CAS No. 57-74-9 EPA Chem Code: 058201	B2 (CRAVE) (4/1/87)	Benign & malignant liver tumors; C57B1/6N, CD-1, B6C3F1 & ICR mice (M & F); F344 rats (M).	1.3 E+0 (0) 3.7 E-4 (1)	B2
Comments: Chlordane is structurally related to other known liver carcinogens. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Chlordimeform CAS No. 6164-98-3 EPA Chem Code: 059701	B2 (12/20/85)	Malignant hemangioendothelomas; Tif:MAG:SPF mice (M & F).	1.3 E+0 (Diet) 9.4 E-1 (Occupation)	
Comments: Tumor was observed in 3 studies - Chlordimeform & its two metabolites [N-formyl-4 chloro-o-toluidine & 5-CAT].				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Chlorfenapyr (Pirate) CAS No. 122453-70-0 EPA Chem Code: 129093	Cannot be determined, but suggestive (1/9/97)	The overall evidence in animals was not persuasive, but could not be dismissed. Increased in tumors in rats occurred with significant positive trends only, and mainly at the highest dose.		
Chloroaniline, p- CAS No. 106-47-8 EPA Chem Code: 017203	B2 (4/27/95)	Spleen (fibrosarcomas, hemangiosarcomas & osteosarcomas) (M); Adrenal (pheochromocytomas) (M & F); F344/N rats. Hepatocellular adenomas/carcinomas (M); Hemangiosarcomas in spleen and/or liver (M) B6C3F1	6.38 E-2 (3/4)	
Comments: p-Chloroaniline is a metabolite of Dimilin.				
Chlorobenzene CAS No. 108-90-7 EPA Chem Code: 056504	D (CRAVE) (4/4/90)			D
Comments: Assessment is based on lack of human data, inadequate animal data & predominantly negative genetic toxicity data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Chloroform CAS No. 97-66-3 EPA Chem Code: 020701	B2 (CRAVE) (8/26/87)	Kidney tumors; Osborne-Mendel rats (M). Hepatocellular carcinomas; B6C3F1 mice (M & F); Hepatomas; A and NLC strain mice (F).	6.1 E-3 (0) 2.3 E-5 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Chlorothalonil CAS No. 1897-45-6 EPA Chem Code: 081901	Likely (10/27/97)	Renal adenomas & carcinomas, both sexes of rats & mice; rarity of the tumor response in the kidney; papillomas and/or carcinomas of the forestomach in rats & mice; CD-1 mice; Fischer 344 & Osborne- Mendel rats.	7.66 E-3 (3/4)	Pending
Comments: HCPRC recommended that a non-linear approach to risk assessment, using MOE, should be used.				
Chlorpropham (CIPC) CAS No. 101-21-3 EPA Chem Code: 018301	E (10/11/94)			
Chlorpyrifos CAS No. 2921-88-2 EPA Chem Code: 059101	E (11/23/93)			
Cinch (Cinmethylin) CAS No. 87818-31-3 EPA Chem Code: 128837	D (4/7/89)			
Comments: HCPRC concluded there was no substantial biological evidence of tumor formation in mice or rats, however, dosing in both studies were inadequate for determining carcinogenic potential. Additional studies are requested.				



CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Clodinafop-propargyl CAS No. 105511-96-4 EPA Chem Code: 125203	Likely to be carcinogenic to humans (12/7/99)	Prostate gland adenomas & combined adenomas/carcinomas (M); Ovarian tubular adenomas (F); Tif:RA1f(SPF) rats. Hepatomas and combined hepatomas/carcinomas (M&F); Hemangiomas & angiosarcomas (F); Tif:MAGf(SPF) mice.	1.29 E-1 (3/4)	
Comments: For the quantification of human cancer risk, the Committee recommended a linear low-dose extrapolation (Q1*) approach based on the most potent of the tumors type. This approach is supported by possible genotoxic potential & the lack of confirmation of the mode of action of Clodinafop-propargyl.				
Clofentezine (Apollo) CAS No. 74115-24-5 EPA Chem Code: 125501	C (4/3/90)	Increased incidence of benign & malignant thyroid follicular cell adenoma/carcinoma; Sprague-Dawley rat	3.76 E-2 (3/4)	C
Comments: HCPRC also noted that the tumor incidence was greater than the upper limit of the historical control range & was increased at a dose level well below a limit dose or Maximum Tolerated Dose (MTD) predicted by subchronic studies. HCPRC also concluded that no quantification of risk would be done at the present time & that another long-term study using higher doses may be necessary to support appropriate characterization & quantification of potential risks associated with the uses of Clofentezine.				
Cloransulam-methyl (XDE-565) CAS No. 147150-35-4 EPA Chem Code: 129116	Not likely (9/30/97)			
Copper (metallic) CAS No. 7440-50-8 EPA Chem Code: 022501	D (CRAVE) (9/15/87)			D
Comments: Assessment based on lack of human data & inadequate animal data from assays of copper compounds. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Coumaphos CAS No. 56-72-4 EPA Chem Code: 036501	E (11/22/94)			
Creosote CAS No. 8001-58-9 EPA Chem Code: 025004	B1 (CRAVE) (5/13/87)	Limited evidence of the association between occupational creosote contact & subsequent tumor formation, sufficient evidence of local & distant tumor formation after dermal application to mice.		B1
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Cresol, p-Chloro-m- CAS No. 59-50-7 EPA Chem Code: 064206	D (11/28/95)			
Comments: HCPRC concluded the evidence is inadequate & cannot be interpreted as showing either the presence or absence of a carcinogenic effect.				
Cryolite (Kryocide) CAS No. 15096-52-3 EPA Chem Code: 075101	D (1/26/93)			
Comments: Assessment based on inadequate animal data.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Cyanazine (Bladex) CAS No. 21725-46-2 EPA Chem Code: 100101	C(q) (7/30/91)	Mammary gland tumors (adenocarcinoma, carcinosarcoma); Sprague-Dawely rat (F).	1.0 E-0	Pending
Cyclanilide CAS No. 113136-77-9 EPA Chem Code: 026201	Not likely (4/9/97)			
Cyhalothrin/Karate CAS No. 68085-85-8 EPA Chem Code: 128867	D (9/15/94)			
Comments: Due to the equivocal nature of the findings in the mouse study & in view of the inadequacy of the dose levels tested, the RFDC concluded that the chemical should be classified as a "Group D."				
Cyhexatin (TCTH) CAS No. 13121-70-5 EPA Chem Code: 101601	Not likely to be carcinogenic to humans (8/1/00)			
Cymoxanil CAS No. 57966-95-7 EPA Chem Code: 129106	Not likely (1/21/98)			
Cypermethrin CAS No. 52315-07-8 EPA Chem Code: 109702	C (9/27/88)	Benign lung adenomas (increase in both adenomas and adenomas/ carcinomas combined); Alderly Park SPF Swiss strain mice (F).		
Cyproconazole (SAN 619F) CAS No. 94361-06-5 EPA Chem Code: 128993	B2 (12/04/92)	Hepatocellular adenomas & carcinomas; CD-1 mice (M & F).	3.02 E-1 (2/3)	
Comments: Assessment also based on the possible clastogenic activity of Cyproconazole, tumors in mice & rats administered structurally-related analogues from the same chemical class and lack of adequate rat carcinogenicity study.				
Cyprodinil CAS No. 121552-61-2 EPA Chem Code: 288202	Not likely (1/14/98)			
Cyromazine (Larvadex) CAS No. 66215-27-8 EPA Chem Code: 121301	E (1/6/95)			
Comments: Metabolite is Melamine.				
DDD CAS No. 72-54-8 EPA Chem Code: 029101	B2 (CRAVE) (6/24/87)	Lung tumors (M & F), liver tumors (M); CF-1 mice. Thyroid tumors (follicular cell adenomas & carcinomas); Osborne-Mendel rats (M).	2.4 E-1	B2

Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
DDE CAS No. 72-55-9 EPA Chem Code:	B2 (CRAVE) (6/24/87)	Liver tumors; B6C3F1 mice (hepatocellular carcinomas) (M & F); CF-1 mice (hepatomas) (M & F). Liver (neoplastic nodules); Syrian Golden Hamsters (M & F). Thyroid tumors; Osborne-Mendel rats (F).	3.4 E-1	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
DDT CAS No. 50-29-3 EPA Chem Code: 029201	B2 (CRAVE) (6/24/87)	Tumors (generally of the liver) were observed in 7 studies in various mouse strains [BALB/C, CF-1, A strain, Swiss/Bomaby & (C57B1)(C3HxAKR)] and in 3 rat studies (Wistar, MRC Porton & Osborne-Mendel).	3.4 E-1 (O) 9.7 E-5 (I)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
DEET CAS No. 134-62-3 EPA Chem Code: 080301	D (1/4/96)			
Comments: Dosing for male rats was considered inadequate. [Syn. N,N-Diethyl-metatoluamide]				
Dacthal (DCPA) CAS No. 1861-32-1 EPA Chem Code: 078701	C(q) (2/10/95)	Thyroid tumors (M & F); Hepatocellular adenoma/carcinoma/hepatoculoangiocarcinoma (F); Sprague-Dawley rats. Hepatocellular adenomas & combined adenoma/carcinoma; CD-1 mice (F).	1.49 E-3 (3/4)	
Daminozide (Alar) CAS No. 1596-84-5 EPA Chem Code: 035101	B2 (7/26/91)	Multiple sites (eg. lungs, vessels, liver & kidney); Multiple species, strains & studies.	8.7 E-3	
Comments: SAP recommended repeating carcinogenicity studies.				
Dazomet CAS No. 533-74-4 EPA Chem Code: 035602	D (12/7/93)	Equivocal evidence of hepatocellular tumors; B6C3F1 mice (F).		
Comments: The HCPRC noted that the existing genotoxicity data for Dazomet are predominantly positive, & concluded additional testing may be necessary, if there are significant changes in use patterns.				
Desmedipham CAS No. 13684-56-5 EPA Chem Code: 104801	E (7/26/94)			
Di(2-ethylhexyl)phthalate CAS No. 117-81-7 EPA Chem Code: 295200	B2 (CRAVE) (10/7/87)	Hepatocellular carcinomas & combined incidence of carcinomas & adenoma; Fischer 344 rats (F) and B6C3F1 mice (M & F). Neoplastic nodules & hepatocellular carcinomas; Fischer 344 rats (M).	1.4 E-2	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. DEHP, Bis(2-ethylhexy)phthalate]				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Diazinon CAS No. 333-41-5 EPA Chem Code: 057801	Not likely (9/21/99)			
Dibromochloropropane (DBCP) CAS No. 96-12-8 EPA Chem Code: 011301	B2 (CAG)	Liver, kidney, stomach, nasal; Osborne-Mendel & Fischer 344 rats.	1.2 E-5 (2/3)	Pending
Comments: OPP has not reviewed this chemical.				
Dibromoethane, 1,2- CAS No. 106-93-4 EPA Chem Code: 042002	B2 (CRAVE) (5/13/87)	Increased incidence of a variety of tumors in rats & mice by 3 routes of administration at both the site of application and at distant sites. EDB is mutagenic in various in vitro and in vivo assays.	8.5 E+1 (0) 2.2 E-4 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. EDB, Ethylene dibromide]				
Dibutyl phthalate CAS No. 84-74-2 EPA Chem Code: 028001	D (CRAVE) (8/26/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Dicamba CAS No. 1918-00-9 EPA Chem Code: 029801	D (7/29/96)			Pending
Comments: The RFDC concluded that doses selected for the rat & mouse studies were not adequate.				
Dichlobenil CAS No. 1194-65-6 EPA Chem Code: 027401	C (7/18/95)	Adenomas alone & in combined adenoma/carcinoma at the HDT only (F); Hepatocellular adenomas and carcinomas, alone and combined (M & F); Fischer 344 rats.		
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) should be used for quantification of human risk.				
Dichlorobenzamide, 2,6- CAS No. 2008-88-4 EPA Chem Code: 027402	Not classifiable (11/28/95)			
Comments: RFDC concluded that the rat study to be unacceptable as presented. The tumor incidences were not adequately reported. There was no mouse carcinogenicity study available for review. RFDC concluded that the chemical is not classifiable for carcinogenic potential because of the inadequacy of the existing data including the carcinogenicity data.				
Dichlorobenzene, 1,2- CAS No. 95-50-1 EPA Chem Code: 059401	D (CRAVE) (12/6/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. Orthodichlorobenzene]				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Dichloroethane, 1,2- CAS No. 107-06-2 EPA Chem Code: 042003	B2 (CRAVE) (12/4/86)	Induction of several tumor types in Osborne-Mendel rats & B6C3F1 mice treated by gavage and lung papillomas in ICR/HA Swiss mice after topical application.	9.1 E-2 (O) 2.6 E-5 (I)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. EDC]				
Dichloroethylene, 1,1- CAS No. 75-35-4 EPA Chem Code: 600033	C (CRAVE) (1/7/87)	Kidney adenomacarcinoma; Swiss mice (M)	6.0 E-1 (O) 5.0 E-5 (I)	C
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. Vinylidene chloride]				
Dichloromethane CAS No. 75-09-2 EPA Chem Code: 042004	B2 (CRAVE) (04/6/89)	Hepatocellular neoplasms & alveolar/bronchiolar neoplasms; B6C3F1 mice (M & F). Benign mammary tumors (M & F), salivary gland sarcomas (M), leukemia (F); F344 rats.	7.5 E-3 (O) 4.7 E-7 (I)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Dichloropropene, 1,3- CAS No. 542-75-6 EPA Chem Code: 029001	B2 (12/8/89)	Forestomach, liver, mammary, thyroid, adrenal, urinary & lung tumors; Fischer 344 rats & B6C3F1 mice (M & F). Bronchioloalveolar adenomas; B6C3F1 mice (M).	1.22 E-1 (3/4) (O)	B2
Comments: [Syn. Telone II]				
Dichlorvos (DDVP) CAS No. 62-73-7 EPA Chem Code: 084001	Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential (3/1/00)		7.68 E-2 (3/4)	B2
Comments: CRAVE Q* = 2.9 E-1 (O). Rationale for CARC classification: 1) MCL in the M Fischer rat has certain properties in terms of variability & reliability which limit its usefulness for human risk assessment. 2) The forestomach tumors, observed at gavage doses causing inhibition of plasma & RBC ChE & cholinergic signs, are also limited in their use for human risk assessment. 3) The fact that DDVP is only positive by the gavage route & negative by the inhalation route, which is the major route of human exposure, indicates that any classification by the oral route may be limited since localized effects in the forestomach may not be applicable to human risk assessment.				
Diclofop-methyl (Hoelon) CAS No. 51338-27-3 EPA Chem Code: 110902	Likely to be carcinogenic to humans (5/24/00)	Liver tumors were seen in both sexes of two species including both benign & malignant liver tumors in Wistar rats & B6C3F1 mice. Increases in the incidence of thyroid follicular cell tumors in F rats & Leydig cell tumors in M rats were possibly treatment-related.	7.36 E-2 (3/4)	
Comments: CARC recommended a linear low-dose (Q1*) extrapolation approach for the quantification of human cancer risk based on the most potent of the liver tumors observed in mice. This approach is supported by the lack of confirmation of the mode of action.				
Dicofol (Kelthane) CAS No. 115-32-2 EPA Chem Code: 010501	C (6/24/92)	Liver tumors (adenomas/carcinomas); B6C3F1 mice (M)		Deferred
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) approach should be used for quantification of human risk.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Microtophos (Bidrin) CAS No. 141-66-2 EPA Chem Code: 035201	Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential (10/18/99)	Increasing trend for thyroid follicular cell adenomas; C57BL/10 J CD-1 Alpk mice (M & F)		
Comments: CARC recommended that an in vivo comet assay on the target organ be conducted to examine possible interaction with DNA. The Committee recommended that for human risk characterization no quantification for cancer risk is required.				
Dieldrin CAS No. 60-57-1 EPA Chem Code: 045001	B2 (CRAVE) (3/5/87)	Effects range from benign liver tumors to hepatocarcinomas with transplantation confirmation, to pulmonary metastases; M & F mice (C3HeB/Fe, C3H, CF1, B6C3F1, C3H/HE & C57B1/6J)	1.6 E+1 (0) 4.6 E-3 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Diethyl phthalate CAS No. 84-66-2 EPA Chem Code: 128947	D (CRAVE) (8/26/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Difenoconazole (Dividend) CAS No. 119446-68-3 EPA Chem Code: 128847	C (7/27/94)	Statistically significant increases in liver adenomas, carcinomas & combined adenomas/carcinomas; CD-1 mice (M & F).	3.94 E-2 (3/4)	
Comments: Tumors were observed at doses which were considered to be excessively high for carcinogenicity testing. HCPRC recommended that for the purpose of risk characterization, the Margin of Exposure (MOE) approach should be used for quantification of human risk.				
Difenzoquat methyl sulfate CAS No. 43222-48-6 EPA Chem Code: 106401	E (5/24/94)			
Diiflubenzuron (Dimilin) CAS No. 35367-38-5 EPA Chem Code: 108201	E (4/27/95)			
Comments: p-Chloroaniline is a metabolite.				
Diiflufenzopyr-sodium CAS No. 109293-98-3 EPA Chem Code: 005107	Not likely (10/6/98)			
Comments: The HIARC had a metabolism concern for 3,5-difluoroaniline (DFA), a rat metabolite. The HIARC concluded that if significant secondary residues [meat/milk] of this minor rat urinary metabolite [<1%] occurred, then the metabolite would have to be regulated based on carcinogenicity of dichloroaniline [DCA]. Since there are no toxicological data for DCA, as per HED policy, all chloroanilines are considered to be carcinogens and a carcinogenic risk assessment will be conducted using the Q1* for Parachloroaniline (PC). The Q1* is 6.38 x 10E-2.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Dimethenamid (SAN 582H) CAS No. 87674-68-8 EPA Chem Code: 129051	C (9/15/95)	Statistically significant increasing trend for benign combined and/or malignant liver tumors; Sprague-Dawley rat (M). Unresolved issues regarding nasal tumors, strong mutagenicity data & SAR.		
Comments: HCPRC recommended a heritable translocation test, which is the next required test after a positive dominant lethal study (as per Mutagenicity Guidelines, Subdivision F, addendum 9).				
Dimethipin (Harvade) CAS No. 55290-64-7 EPA Chem Code: 118901	C (1/5/90)	Lung adenomas & carcinomas; CD-1 mice (M)		C
Comments: Repeat of rat carcinogenicity study is requested. Consideration of whether or not a quantification of risk is to be determined for Harvade was deferred, pending receipt of an adequate 2-year study in the rat.				
Dimethoate CAS No. 60-51-5 EPA Chem Code: 035001	C (8/29/91)	Hemolymphoreticular tumors; B6C3F1 mice (M). Spleen (hemangioma & hemangiosarcoma) skin (hemangiosarcoma), lymph (angioma and angiosarcoma) tumors; Wistar rats (M).		
Comments: HCPRC recommended for the purpose of risk characterization that the Reference Dose (RfD) approach should be used for quantification of human risk.				
Dimethyl ether CAS No. EPA Chem Code:	D (1/12/94)			
Comments: Assessment based inadequate animal data. In a rat study [Crl:CD(SD)BR] there was statistical elevation in total mammary tumors; however the HCPRC agreed that the evidence was not convincing.				
Dimethyl phthalate CAS No. 131-11-3 EPA Chem Code: 028002	D (CRAVE) (8/26/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Dinocap (Karathane) CAS No. 39300-45-3 EPA Chem Code: 036001	E (6/22/94)			
Dinoseb CAS No. 88-85-7 EPA Chem Code: 037505	C (6/19/86)	Liver adenomas; CD-1 mice (F).		D
Comments: Repeat of rat carcinogenicity study is requested.				
Diquat dibromide CAS No. 85-00-7 EPA Chem Code: 032201	E (5/12/94)			Pending

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Disulfoton (Disyston) CAS No. 298-04-4 EPA Chem Code: 032501	E (4/21/97)			
Dithiopyr (MON 7200) CAS No. 97886-45-8 EPA Chem Code: 128994	E (10/13/93)			
Diuron CAS No. 330-54-1 EPA Chem Code: 035505	Known/Likely (5/8/97)	Urinary bladder carcinomas; Wistar rat (M & F). Mammary gland carcinomas; NMRI mice (F). Information from structurally related analogs provided further support.	1.91 E-2 (3/4)	
Comments: For the purpose of risk characterization, a low dose linear extrapolation (Q1*) model to be applied to the animal data for the quantification of human risk, based on urinary bladder carcinomas in the male rat.				
Emamectin CAS No. 137512-74-4 EPA Chem Code: 122806	Not likely (3/19/98)			
Comments: This classification was based on the lack of evidence of carcinogenicity in male & female rats or male & female mice at doses that were judged to be adequate to assess the carcinogenic potential of the chemical.				
Endosulfan CAS No. 115-29-7 EPA Chem Code: 079401	Not likely to be carcinogenic to humans (1/31/00)			Deferred
Endrin CAS No. 72-20-8 EPA Chem Code: 041601	D (CRAVE) (10/19/88)	An NCI bioassay was suggestive of response in Osborne-Mendel rats (M & F).		D
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Epichlorohydrin CAS No. 106-89-8 EPA Chem Code: 097201	B2 (CRAVE) (10/29/86)	Multiple studies in rats & mice administered epichlorohydrin by various routes were positive. As Epichlorohydrin is a strong alkylating agent, tumors are produced at the site of application.	9.9 E-3 (0) 1.2 E-6 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Esfenvalerate (Asna) CAS No. 66230-04-4 EPA Chem Code: 109303	E (7/1/96)			
Comments: Data from Fenvalerate (CAS No. 51630-58-1) was used in this assessment.				
Ethalfuralin (Sonalan) CAS No. 55283-68-6 EPA Chem Code: 113101	C(q) (9/14/94)	Mammary tumors (F); Suggestion of bladder tumors (F) and kidney tumors (M & F); Fischer 344 rats	8.9 E-2 (3/4)	
Comments: HCPRC considered the dose levels in the mouse study to be inadequate; however HCPRC did not recommend repeating the study.				



CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Ethametsulfuron CAS No. 97780-06-8 EPA Chem Code: 129091	Can not be evaluated (10/22/98)			
Comments: The carcinogenic potential of Ethametsulfuron can not be evaluated since the highest dose tested in mice and rats did not elicit systemic toxicity and thus were judged to be inadequate to assess the carcinogenic potential of Ethametsulfuron. No rationale was provided for dose selection. HIARC noted that Ethametsulfuron, sulfonylurea is structurally related to other sulfonylureas such as Bensulfuron methyl, Halosulfuron methyl (Group E), Nicosulfuron (Group E), Primisulfuron methyl (Group D) & Rimsulfuron (Group E).				
Ethephon CAS No. 16672-87-0 EPA Chem Code: 099801	D (5/5/94)			
Comments: The RFDC considered that the evidence from the 2 rat studies and 1 of the mouse studies to be inadequate to support a positive carcinogenicity finding, while evidence from the other mouse study was equivocal.				
Ethion CAS No. 563-12-2 EPA Chem Code: 058401	E (6/20/94)			
Ethiozin (Ebuzin/Tycor) CAS No. 64529-56-2 EPA Chem Code: 128883	Tentative C (9/12/90)	Thyroid follicular cell tumors; F344 rats (M & F).		
Comments: Quantification deferred pending submission & evaluation of additional data.				
Ethofenprox (Etofenprox) CAS No. 80844-07-1 EPA Chem Code: 128965	C(q) (5/24/90)	Combined thyroid follicular cell adenomas/carcinomas; Sprague-Dawley rats (M & F).	5.1 E-3 (2/3)	
Ethofumesate CAS No. 26225-79-6 EPA Chem Code: 110601	D (2/24/94)			
Comments: Assessment based on the fact that the carcinogenicity phase of the rat study & the hamster study were both considered to be inadequate.				
Ethoprop (Ethoprophos) CAS No. 13194-48-4 EPA Chem Code: 041101	Likely (10/7/98)	Pheochromocytoma - adrenal glands (malignant); Sprague-Dawley rat (M); Cell carcinomas - thyroid gland; Sprague-Dawley & Fischer 344 rat (M); Evidence of clastogenicity in vitro mutagenicity testing.	2.81 E-2 (3/4)	
Comments: A liner low-dose approach for human risk characterization & extrapolation (Q1*) should be based on malignant pheochromocytomas of the adrenal glands in male rats at all dose levels tested.				
Ethylene diamine CAS No. 107-15-3 EPA Chem Code: 004205	D (CRAVE) (7/25/91)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRATE CLASS
Ethylene oxide CAS No. 75-21-8 EPA Chem Code: 042301	B1 (OHEA, 1985)			
Comments: OPP has not reviewed this chemical.				
Ethylene thiourea (ETU) CAS No. 96-45-7 EPA Chem Code: 600016	B2 (3/19/90)	Thyroid adenoma, carcinoma, & combined adenoma/carcinoma; F344 & CRCD rats (M & F). Thyroid adenomas & carcinoma, putuitary & liver tumors; B6C3F1 & C57BL/6 x AKR mice (M & F).	6.01 E-2 (3/4)	Pending
Fenamiphos (Nemacur) CAS No. 22224-92-6 EPA Chem Code: 100601	E (11/23/93)			
Fenarimol CAS No. 60168-88-9 EPA Chem Code: 206600	E (10/23/86)			
Fenbuconazole (Fenethanil) CAS No. 114369-43-6 EPA Chem Code: 129011	C(q) (4/15/96)	Thyroid follicular cell adenomas &/or combined adenomas/carcinomas; Sprague-Dawley rats (M). Hepatocellular carcinomas (M); Hepatocellular adenomas & combined adenomas and/or carcinomas (F); CD-1 mice.	3.59 E-3 (3/4)	
Comments: HCPRC recommended that for the purpose of risk characterization a low dose extrapolation (Q1*) model applied to the experimental animal tumor data should be used for quantification of human risk.				
Fenbutatin oxide (Vendex) CAS No. 13356-08-6 EPA Chem Code: 104601	E (10/8/92)			
Fenitrothion (Sumithion) CAS No. 122-14-5 EPA Chem Code: 105901	E (7/13/93)			
Fenoxycarb CAS No. 72490-01-8 EPA Chem Code: 125301	Likely (12/22/97)	Lung adenomas, carcinomas & combined adenoma/carcinoma; Harderian gland adenomas; CD-1 mice (M).		
Comments: HCPRC recommended a low dose extrapolation model be applied to the animal data for the quantification of human risk.				
Fenpropathrin (Danitol) CAS No. 39515-41-8 EPA Chem Code: 127901	E (3/31/93)			
Fenpyroximate CAS No. 134098-61-6 EPA Chem Code: 129131	Not likely (2/19/97)			

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRATE CLASS
Fenthion CAS No. 55-38-9 EPA Chem Code: 053301	E (3/11/96)			
Fenvalerate (Pydrin) CAS No. 51630-58-1 EPA Chem Code: 109301	E (7/1/96)			
Comments: All food uses for Fenvalerate have or will be transferred to Esfenvalerate (CAS No. 66230-44-4). Fenvalerate data will be used in the Esfenvalerate assessment.				
Fipronil CAS No. 120068-37-3 EPA Chem Code: 129121	C (7/18/95)	Thyroid follicular cell adenomas, carcinomas & combined adenomas/ carcinomas (M); thyroid follicular cell adenomas and combined adenomas/carcinomas (F); Charles River CD rats.		
Comments: HCPRC recommended that the RfD methodology be used for estimation of human risk.				
Flucarbazon sodium CAS No. 181274-17-9 EPA Chem Code: 114009	Not likely to be carcinogenic to humans (7/19/00)			
Fludioxonil (Maxim) CAS No. 13141-86-1 EPA Chem Code: 071503	D (9/19/96)	Based on increased liver tumors in rats (F) that was statistically significant for combined adenoma/carcinoma only, lack of response in M rats or either sex of the mouse & need for additional mutagenicity studies.		
Flumetsulam (XRD-498) CAS No. 98967-40-9 EPA Chem Code: 129016	E (6/23/93)			
Flumiclorac pentyl CAS No. 87546-18-7 EPA Chem Code: 128724	E (9/7/94)			
Fluometuron CAS No. 2164-17-2 EPA Chem Code: 035503	C(q) (8/28/96)	Statistically significant increases in combined adenomas/carcinomas of the lung (M); Malignant lymphocytic lymphomas (F); CD-1 mice.	1.80 E-2 (3/4)	
Comments: HCPRC recommended for the purpose of risk characterization, both a low dose extrapolation model (Q1*) applied to animal data (lung tumors in male mice) and the Reference Dose approach be used.				
Fluridone CAS No. 59756-60-4 EPA Chem Code: 112900	E (7/1/85)			
Fluroxypyr (DOWCO 433) CAS No. 69377-81-7 EPA Chem Code: 128959	Not likely (1/28/98)			

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Flusilazole (Nustar) CAS No. 85509-19-9 EPA Chem Code: 128835	Deferred (3/23/88)			
Comments: HCPRC recommends new carcinogenicity studies in M & F in both the rat and mouse.				
Fluthiacet-methyl (Action) CAS No. 117337-19-6 EPA Chem Code: 108803	Likely (12/8/98)	Pancreatic cell tumors (exocrine adenomas, islet cell adenomas, and combined islet cell tumors); Sprague-Dawley rats (M). Hepatocellular tumors (adenomas and combined adenoma/carcinoma); CD-1 mice (M & F).	2.07 E-1 (3/4)	
Comments: CARC recommended a linear low-dose approach (Q1*) for human characterization & determined that extrapolation should be based on the combined hepatocellular adenoma/carcinoma in male mice. Although both tumor types (pancreatic cell & hepatocellular) are of concern, the hepatocellular tumors were selected for extrapolation since this tumor type was observed at a lower dose (10 mg/kg/day) in mice compared to the pancreatic cell tumors which were seen at a higher dose (130 mg/kg/day) in rats.				
Flutolanil (Moncut) CAS No. 66332-96-5 EPA Chem Code: 128975	E (6/9/94)			
Folpet CAS No. 133-07-3 EPA Chem Code: 081601	B2 (9/4/86)	Duodenum (carcinoma & adenoma); CD-1 & B6C3F1 mice (M & F); Hyperkeratosis/acanthosis; B6C3F1 mice (M).	1.86 E-3 (3/4)	B2
Comments: Additional information for the rat studies has been requested.				
Fomesafen (Flex) CAS No. 72128-02-0 EPA Chem Code: 123802	C(q) (8/27/86)	Liver tumors (adenomas, carcinomas, & adenomas/carcinomas combined); CD-1 mice (M & F).	1.9 E-1 (2/3)	C
Fonofos (Dyfonate) CAS No. 944-22-9 EPA Chem Code: 041701	E (11/10/93)			
Formaldehyde CAS No. 50-00-0 EPA Chem Code: 043001	B1 (CRAVE) (2/3/88)	Statistically significant associations between site-specific respiratory neoplasms & exposure to formaldehyde; Humans. Nasal squamous cell carcinomas; Sprague-Dawley & Fischer 344 rats, B6C3F1 mice.	1.3 E-5 (I)	B1
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Formetanate hydrochloride CAS No. 23422-53-9 EPA Chem Code: 097301	E (5/20/96)			
Fosetyl-AL (Aliette) CAS No. 39148-24-8 EPA Chem Code: 123301	Not amenable to classification (7/29/92)			C
Comments: HCPRC concluded that Fosetyl-AL was not amenable to classification using current Agency cancer guidelines. The HCPRC concluded that pesticidal use of Fosetyl-AL is unlikely to pose a carcinogenic hazard to humans. [Note: CRAVE classification based on urinary bladder tumors (adenomas/carcinomas combined) in male CD rats.]				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Furmecyclo (Xyligen B) CAS No. 60568-05-0 EPA Chem Code: 122601	B2 (7/3/85)	Liver tumors (M & F); Urothelial tumors (M); Sprague-Dawley rats.	2.98 E-2 (2/3)	B2
Comments: CRAVE Q* = 3.0 E-2 (0).				
Glyphosate CAS No. 1071-83-6 EPA Chem Code: 417300	E (12/16/91)			D
Glyphosate trimesium CAS No. 81591-81-3 EPA Chem Code: 128501	E (7/26/94)			
Comments: [Syn. Sulfosate]				
HOE 107892 CAS No. 135590-91-9 EPA Chem Code: R47618	Not likely (11/24/98)			
Halosulfuron-methyl CAS No. 100784-20-1 EPA Chem Code: 128721	Not likely (2/26/98)			
Haloxypop-methyl (Verdict) CAS No. 690806-40-2 EPA Chem Code: 125201	B2 (9/18/89)	Liver tumors [adenomas (M), carcinomas (F) & adenomas/carcinomas (M & F)]; B6C3F1 mice.	7.39 E+0 (2/3)	Pending
Comments: Assessment also based upon the acknowledgement by the registrant that the compound would be likely to cause tumors of the liver in rats if tested at adequate dosage levels.				
Heptachlor CAS No. 76-44-8 EPA Chem Code: 044801	B2 (CRAVE) (4/1/87)	Benign and malignant liver tumors (M & F) in mice (C3H & B6C3F1),	4.5 E+0 (0) 1.3 E-3 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Heptachlor epoxide CAS No. 1024-57-3 EPA Chem Code: 044801	B2 (CRAVE) (4/1/87)	Liver carcinomas; C3H & CD-1 mice (M & F); CFN rats (F).	9.1 E+0 (2/3) (0) 2.6 E-3 (2/3) (1)	
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Hexachlorobenzene (HCB) CAS No. 118-74-1 EPA Chem Code: 061001	B2 (CRAVE) (3/1/89)	Tumors in the liver, thyroid & kidney in rats (Sprague-Dawley, Agus & Wistar), mice (Swiss & ICR) and hamsters (Syrian Golden).	1.02 E+0 (3/4) (0)	B2
Comments: Hexachlorobenzene is a contaminate of PCNB & Dacthal. OPP has revised (06/21/95) the oral Q* for HCB: 1.02 E+0.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Hexachlorocyclohexane CAS No. 608-73-1 EPA Chem Code: 008901	B2 (CRAVE) (12/17/86)	Benign hepatic nodules & hepatocellular carcinomas; Swiss mice (M). Liver nodules hepatomas; dd mice (M & F). Hepatomas; ICR-JCL mice (M & F).	1.8 E+0 (0) 5.1 E-4 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. t-HCH]				
Hexachlorocyclopentadiene CAS No. 77-47-4 EPA Chem Code: 027502	D (CRAVE) (10/5/89)			D
Comments: Assessment based on inadequate data in humans & no data in animals concerning carcinogenicity. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Hexachloroethane CAS No. 67-72-1 EPA Chem Code: 045201	C (CRAVE) (7/23/86)	Hepatocellular carcinoma; B6C3F1 mice (M & F).	1.4 E-2 (0) 4.0 E-6 (1)	
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Hexaconazole (Anvil) CAS No. 79983-71-4 EPA Chem Code: 128925	C(q) (9/26/90)	Benign Leydig cell tumors; Wistar (Alpk:APfSD) rat (M)	1.6 E-2 (3/4)	
Comments: Chemical was not adequately tested for carcinogenic potential in mice. Repeat of study not required at this time. Quantification of potential human cancer risk using a low-dose extrapolation model (Q1*), was recommended.				
Hexazinone CAS No. 51235-04-2 EPA Chem Code: 107201	D (7/27/94)	Statistically significant increasing trend in combined hepatocellular adenoma/carcinoma; CD-1 mice (F).		
Comments: Assessment based on evidence that was equivocal (not entirely negative, but yet not convincing) since only statistically significant increase was in F mice (by trend test, but not by pairwise comparison with controls).				
Hexythiazox (Savey) CAS No. 78587-05-0 EPA Chem Code: 128849	C(q) (3/16/88)	Liver (hepatocellular carcinomas & carcinomas/adenomas combined); B6C3F1 mice (F).	2.22 E-2 (3/4)	Pending
Hydramethylnon (Amdro) CAS No. 67485-29-4 EPA Chem Code: 118401	C (3/28/91)	Lung adenomas & combined adenomas/carcinomas; CD-1 mice (F).		
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) approach should be used for the quantification of human risk.				
Hydrogen cyanamide CAS No. 420-04-2 EPA Chem Code: 014002	C(q) (9/15/93)	Ovarian granulosa-theca tumors; CRL:CD-1 (ICR)BR mice (F) [Hydrogen cyanamide]. Positive trend in hemangiosarcomas; B6C3F1 mice (M) [Calcium cyanamide].	6.74 E-2 (2/3)	
Comments: Calcium cyanamide is rapidly & quantitatively converted to Hydrogen cyanamide in solution & at the pH of the human & rat gut. Thus, Calcium cyanamide studies were used as supporting data for Hydrogen cyanamide.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRABE CLASS
Hydroprene (Altozar) CAS No. 41096-46-2 EPA Chem Code: 486300	D (6/8/95)			
Comments: Assessment based on equivocal nature of the findings in the rat study and the lack of a carcinogenicity study in a second species.				
Hydroquinone CAS No. 123-31-9 EPA Chem Code:	Not classified		5.6 E-2	
Comments: Hydroquinone is a plant metabolite of Asulam.				
Imazalil CAS No. 35554-44-0 EPA Chem Code: 111901	Likely to be carcinogenic to humans (12/7/99)	An increase (both trend and pair-wise) in combined liver adenomas/ carcinomas in male Swiss albino mice & male Wistar rats and an increase in combined thyroid follicular adenomas/carcinomas in male Wistar rats.	6.11 E-2 (3/4)	
Comments: The Committee recommended a linear low-dose extrapolation (Q1*) approach for the quantification of human cancer risk based on the most potent liver tumors in mice. This approach is supported by the lack of confirmation of the mode of action. Imazalil is structurally related to triazole compounds, which are hepatocarcinogens in mice.				
Imazapyr (Arsenal) CAS No. 81334-34-1 EPA Chem Code: 128821	E (10/5/95)			
Imidacloprid CAS No. 105827-78-9 EPA Chem Code: 129099	E (11/10/93)			
Indoxacarb (DPX-MP062) CAS No. 173584-44-6 EPA Chem Code: 067710	Not likely to be carcinogenic to humans (7/17/00)			
Iprodione (Glycophene) CAS No. 36734-19-7 EPA Chem Code: 109801	Likely (11/19/97)	Hepatocellular tumors (M&F); Ovarian luteomas (F); CD-1 mice. Testicular interstitial cell tumors (Leydig cell); Crl:CD(SD)BR rats (M).	4.39 E-2 (3/4)	
Comments: CARC re-affirmed that the current linear low-dose extrapolation (Q1*) should be based on the liver tumors in both sexes of mice & the Leydig cell tumor in male rats.				
Isofenphos CAS No. 25311-71-1 EPA Chem Code: 109401	Not likely (1/13/98)			
Isophorone CAS No. 78-59-1 EPA Chem Code: 047401	C (CRABE) (8/5/92)	Preputial gland carcinomas; F344/N rats (M)	6.08 E-4 (3/4)	C
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Isoxaben (EL-107) CAS No. 82558-50-7 EPA Chem Code: 125851	C (1/4/89)	Hepatocellular adenomas; B6C3F1 mice (M & F).		Pending
Isoxaflutole CAS No. 14112-29-0 EPA Chem Code: 123000	Likely (8/6/97)	Statistically significant increases in liver tumors in both sexes of mice & rats; statistically significant increases in thyroid tumors in male rats; CD-1 mice and Sprague-Dawley rats.		
Comments: For the purpose of risk characterization, a non-linear approach-MOE to be applied to the most sensitive precursor lesion in M rat thyroid, and that a linear low-dose extrapolation (Q1*) to be applied for the tumors of the rat liver.				
Kathon 886 (Kathon Biocide) CAS No. 55965-84-9 EPA Chem Code: 107106	D (5/18/95)			
Comments: Assessment based on the lack of second carcinogenicity study in a another species.				
Kresoxim-methyl CAS No. 143390-89-0 EPA Chem Code: 129111	Likely to be carcinogenic to humans (8/19/99)	Liver tumors (hepatocellular adenomas, hepatocellular carcinomas & combined adenomas/carcinomas); Wistar rats (M & F).	2.90 E-3 (3/4)	
Comments: For human risk characterization, CARC recommended the extrapolation of risk using the linear low-dose (Q1*) approach based on combined hepatocellular adenomas/carcinomas in female rats. This extrapolation was supported by the lack of confirmation of the mode of action for liver tumor induction & dose-dependent increased incidence of liver tumors in male & female rats.				
Lactofen (Cobra) CAS No. 77501-63-4 EPA Chem Code: 128888	B2 (4/8/87)	Hepatocellular carcinomas (M); Hepatocellular adenomas & carcinomas (M & F); CD-1 mice. Liver neoplastic nodules; Sprague-Dawley rats (M & F).	1.19 E-1 (3/4)	
Lindane CAS No. 58-89-9 EPA Chem Code: 009001	B2/C (CAG)	Liver and lung tumors (both benign); mice		
Comments: A Lindane metabolite, 2,4,6-trichlorophenol (TCP) is classified as B2. OPP has not reviewed this chemical.				
Linuron CAS No. 330-55-2 EPA Chem Code: 035506	C (4/1/87)	Testicular tumors; CD rats (M); Hepatocellular adenomas; CD-1 mice (M & F).		C
MBC (Carbendazim) CAS No. 10605-21-7 EPA Chem Code: 128872	C(q) (4/7/89)	Liver tumors (hepatocellular adenomas & carcinomas) in 2 genetically related strains of mice (CD-1 & Swiss SPF) (M & F).	2.39 E-3 (3/4)	
Comments: Benomyl rapidly hydrolyses to MBC in an aqueous environment. MBC also appears to be the initial metabolite in mammalian systems. MBC has similar or increased toxicity, both acute & chronic, to Benomyl.				



CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	GRADE CLASS
MGK Repellent 326 CAS No. 136-45-8 EPA Chem Code: 047201	B2 (7/21/93)	Multiple malignant & benign tumors [liver (M & F), kidney (M & F), testes (M) & uterine (F); CD rats. Multiple malignant tumors [liver (M & F) & lung/bronchiolar tumors (M)]; CD-1 mice.	2.4 E-3 (2/3) (M) 1.2 E-3 (2/3) (F)	
MGK-264 CAS No. 113-48-4 EPA Chem Code: 057001	C (6/7/95)	Statistically significant increases in hepatocellular adenomas; CD-1 mice (M & F). Statistically significant increases for thyroid follicular cell adenomas; Crl:CDR rats (M).		
Comments: HCPRC recommended that for the purposes of risk characterization, the Reference Dose (RfD) approach should be used for quantitation of human risk.				
MON 13900 (Furilazole) CAS No. 121776-33-8 EPA Chem Code: 911596	Likely to be carcinogenic to humans (9/21/99)	Multiple tumors were seen at multiple sites in two species including both benign & malignant liver tumors in M & F Sprague-Dawley rats & CD-1 mice, rare tumors such as stomach & testicular tumors in M rats & lung tumors in both sexes of mice.	2.74 E-2 (3/4)	
Comments: CARC also recommended for human risk characterization, the extrapolation of risk using the linear low-dose (Q1*) approach for most potent & biologically significant tumor type was recommended. This extrapolation was supported by the increases in the incidence of liver, stomach & testicular tumors as well as lung tumors in one or both sexes of rats or mice, the potential for clastogenic effect, lack of adequate genotoxicity/mutagenicity data, as well as lack of mode of action. MON 13900 is structurally-related to alachlor & acetochlor, which cause tumors at multiple sites (liver, stomach, or lung) in rats and/or mice and have been classified by the CARC as "likely to be carcinogenic to humans."				
MON 21200 (Genesis) CAS No. 82697-71-0 EPA Chem Code: 128726	C (7/23/96)	Statistically significant increase in histiocytic sarcomas (F); CD-1 mice.		
Comments: HCPRC recommended for the purpose of risk characterization, the RfD approach should be used for quantitation of human risk.				
MON 4660 CAS No. 71526-07-3 EPA Chem Code: 600046	Likely to be carcinogenic to humans (12/9/99)	Hepatocellular adenomas, carcinomas & combined adenomas/carcinomas; (M&F) rats & mice. Stomach squamous cell papillomas & combined papillomas/carcinomas; M rats & M&F mice. Bile duct cholangiomas/carcinomas; M rats. Bronchio-alveolar adenomas, combined adenomas/carcinomas; M mice. Sprague-Dawley rats, CD-1 mice	4.88 E-2 (3/4)	
Comments: The CARC recommended a linear low-dose extrapolation (Q1*) approach for human risk characterization based on the most potent of the tumor types observed in male & female rats & mice. This approach is supported by the lack of data on the mode of action & inadequate data to assess the genotoxic potential.				
MSMA CAS No. 2163-80-6 EPA Chem Code: 013803	Not likely to be carcinogenic to humans (7/26/00)			
Comments: Syn. Monosodium methanearsonic acid. As described in the HIARC report (7/26/00), the chronic RfD for MSMA is based on a Cacodylic acid study because of potential dietary exposure to Cacodylic acid following MSMA application. For the assessment of the lifetime cancer risk through dietary exposure, the Q1* of 6.23 x 10E-2 (mg/kg/day)-1 for Cacodylic acid will be applied. This low dose extrapolation will not be performed for residential or occupational dermal or inhalation exposure because actual exposure is expected to be only to MSMA.				
Malathion CAS No. 121-75-5 EPA Chem Code: 057701	Suggestive evidence of carcinogenicity but not sufficient to assess human carcinogenic potential (4/28/00)	Occurrence of liver tumors in male & female B6C3F1 mice & in female Fischer 344 rats only at excessive doses (statistically significant & outside historical control). Presence of a few rare tumors, oral palate mucosa in F & nasal respiratory epithelium in M&F Fischer 344 rats. Malaoxon is not carcinogenic in M&F Fischer 344 rats.		
Comments: Quantitative risk assessment for carcinogenicity is not required since the Committee classified malathion as having suggestive evidence for cancer. A cancer dose-response assessment, e.g. low dose linear extrapolation model, is not indicated for pesticides in the "suggestive" category.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Maleic hydrazide CAS No. 5716-15-4 EPA Chem Code: 051502	E (11/10/93)			
Mancozeb CAS No. 8018-01-7 EPA Chem Code: 014504	B2 (11/19/92)	Thyroid follicular cell adenomas & carcinomas, combined thyroid follicular cell adenomas and/or carcinomas; Crl:CD(BR) rats (M & F).	USE ETU Q*	
Maneb CAS No. 12427-38-2 EPA Chem Code: 014505	B2 (11/19/92)	Thyroid follicular cell adenomas & carcinomas, combined thyroid follicular cell adenomas and/or carcinomas; Crl:CD(BR) rats (M & F).	USE ETU Q*	
Melamine CAS No. 108-78-1 EPA Chem Code:	Not amenable to classification (7/29/92)	Transitional cell carcinomas of the urinary bladder; F344/N rats (M).		
Comments: HCPRC concluded that Melamine was not amenable to classification using the current Agency guidelines. Based on a mechanistic evaluation of the only tumors seen it appears that humans are not likely to be exposed to doses of Melamine that produce the urinary tract toxicity that precedes & seems to lead to the carcinogenic response in rats. In particular, anticipated human dietary & occupational exposure to the parent compound, Cyromazine, is estimated to produce Melamine concentrations far below the NOEL in rats for the apparent urinary tract tumor precursors. HCPRC concluded that it is unlikely that Melamine exposure would pose a carcinogenic hazard to humans from a pesticidal usage of Cyromazine.				
Mepiquat chloride CAS No. 24307-26-4 EPA Chem Code: 109101	E (6/20/96)			
Mercaptobenzothiazole, 2- CAS No. 149-30-4 EPA Chem Code: 051701	C (11/19/92)	Adrenal gland tumors (M & F), some evidence of preputial gland tumors (M) & equivocal evidence for pituitary gland tumors (M); F344/N rats.		
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) approach should be used for quantification of human risk. [Syn. MBT]				
Mercury (Inorganic) CAS No. 7439-97-6 EPA Chem Code: 052301	D (CRAVE) (1/13/88)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Metalaxyl CAS No. 57837-19-1 EPA Chem Code: 113501	E (12/31/85)			
Comments: Chemical will be re-evaluated when genotoxicity studies are reviewed.				
Metam sodium CAS No. 137-42-8 EPA Chem Code: 039003	B2 (5/1/95)	Malignant angiosarcomas (by both pair-wise & trend analysis); C57BL/10JfCD-1/Alpk mice (M & F). Malignant hemangiosarcomas; Hsd/Ola: Wistar rats (M).	1.98 E-1 (3/4)	

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Methamidophos (Monitor) CAS No. 10265-92-6 EPA Chem Code: 101201	E (10/6/97)			
Methidathion CAS No. 950-37-8 EPA Chem Code: 100301	C (2/19/88)	Liver tumors (benign and malignant); CD-1 mice (M).		C
Methiocarb (Mesurol) CAS No. 2032-65-7 EPA Chem Code: 100501	D (3/2/93)			
Comments: Assessment based on the lack of a second carcinogenicity study in another species.				
Methomyl CAS No. 16752-77-5 EPA Chem Code: 090301	E (10/26/96)			
Methoxychlor CAS No. 72-43-5 EPA Chem Code: 034001	D (CRAVE) (10/7/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inconclusive data in animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Methyl bromide CAS No. 74-83-9 EPA Chem Code: 053201	D (CRAVE) (3/1/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. Bromomethane]				
Methyl ethyl ketone (MEK) CAS No. 78-93-3 EPA Chem Code: 044103	D (CRAVE) (5/30/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Methyl parathion CAS No. 298-00-0 EPA Chem Code: 053501	Not likely (12/1/97)			
Methylene bis(thiocyanate) CAS No. 6317-18-6 EPA Chem Code: 068102	D (5/20/96)	Benign adrenal pheochromocytomas in M and pituitary adenomas in F; Sprague-Dawley rats. Alveolar/bronchial adenomas & carcinomas; CD-1 mice (M & F). [All lesions were within historical control range].		

Comments: RFDC based classification on inadequacy of the data set and on what was considered to be a border line significance of the tumors observed in rats & mice.

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Methylphenol, 3- CAS No. 108-39-4 EPA Chem Code: 022102	C (CRAVE) (10/5/89)	Increased incidence of skin papillomas in mice in an initiation-promotion study.		C
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. meta-Cresol]				
Metolachlor CAS No. 51218-45-2 EPA Chem Code: 108801	C (11/16/94)	Liver adenomas and combined adenomas/carcinomas; Charles River CD (SD)BR rats (F). [Same liver neoplasia in female rats was also observed in a separate repeat study].		C
Comments: HCPRC recommended that a Margin of Exposure (MOE) methodology be used for the estimation of human risk.				
Metribuzin (Sencor) CAS No. 21087-64-9 EPA Chem Code: 101101	D (5/16/95)	Pituitary adenomas; SPF Wistar rats (F)		D
Comments: Note: 1993 rat study in Fischer CDF(F-344)/ BR rats was negative. Chemical structurally related to Ethiozin, which was associated with thyroid cell adenomas & combined adenomas/carcinomas in Fischer 344 rats (M & F).				
Molinate (Ordram) CAS No. 2212-67-1 EPA Chem Code: 041402	C(q) (6/17/92)	Statistically significant increase in combined adenomas & carcinomas in the kidney; Crl:CD(SD)BR rat (M). There was equivocal evidence that Molinate induced an increase in testicular tumors.	4.92 E-2 (3/4)	
Comments: HCPRC recommended for the purpose of risk characterization, a low dose extrapolation (Q1*) model applied to the experimental animal tumor data should be used for quantification of human risk.				
Myclobutanil (Systane/Rally) CAS No. 88671-89-0 EPA Chem Code: 128857	E (6/16/94)			
Naled (Dibrom) CAS No. 300-76-5 EPA Chem Code: 034401	E (8/31/94)			
Naptalam (Alanap-1) CAS No. 132-66-1 EPA Chem Code: 030702	D (9/7/94)			
Comments: Assessment based on the lack of an adequate mouse carcinogenicity study. Naptalam is currently registered as a low volume/minor use chemical. If exposure or use pattern changes, a new mouse study maybe required.				
Naptalam, sodium salt CAS No. 132-67-2 EPA Chem Code: 030703	D (9/7/94)			
Comments: Assessment based on the lack of an adequate mouse carcinogenicity study. Naptalam is currently registered as a low volume/minor use chemical. If exposure or use pattern changes, a new mouse study maybe required.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Nicosulfuron (Accent) CAS No. 111991-09-4 EPA Chem Code: 129008	E (9/1/98)			
Nitrapyrin CAS No. 1929-82-4 EPA Chem Code: 069203	Likely to be carcinogenic to humans (5/5/00)	Increase (both pair-wise & trend) in liver & stomach tumors in B6C3F M & F mice, epididymal sarcomas in M mice & Harderian gland tumors in F mice. Nitrapyrin is structurally related to chlorinated pyridines which are mutagenic & carcinogenic in mice & rats.	4.25 E-2 (3/4)	
Comments: CARC recommended a liner low-dose (Q1*) extrapolation approach for the quantification of human cancer risk based on most potent liver tumors in female mice. This approach is supported by the lack of adequate data on the mode of action & mutagenic concern for Nitrapyrin.				
Nitrobenzene CAS No. 98-95-3 EPA Chem Code: 056501	D (CRAVE) (11/8/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Norflurazon CAS No. 27314-13-2 EPA Chem Code: 105801	C (11/2/90)	Statistically significant increase in comparison to controls in liver adenomas & combined liver adenomas & carcinomas, as well as the statistically significant positive trend for these hepatocellu- ar adenomas & combined adenomas & carcinomas; CD-1 mice (M)		
Comments: HCPRC recommended that for the purposes of risk characterization the Reference Dose (RfD) approach should be used for the quantification of human risk. This conclusion was supported by the presence of only benign (and combined) tumors in only one sex of one species at one dose level, and adequate but negative mutagenicity data, and no positive analogues.				
Orthophenylphenol & Na salt CAS No. 90-43-7 EPA Chem Code: 064103	B2 (8/24/94)	Multiple tumor types in multiple studies. Malignant urinary bladder & kidney tumors (M); Papillomas of the urinary bladder & uterine endometrium (F); F344/DuCrj & F344 rats.		
Oryzalin CAS No. 19044-88-3 EPA Chem Code: 104201	C(q) (3/12/86)	Multiple sites (thyroid, mammary); F344 rats (M & F).	1.3 E-1 (2/3)	C
Oxadiazon CAS No. 19666-30-9 EPA Chem Code: 109001	C(q) (8/27/87)	Liver tumors (malignant, combined malignant & benign); CD CD-1 mice (M & F).	1.4 E-1 (2/3)	Deferred
Oxadixyl (San 371F) CAS No. 7732-09-3 EPA Chem Code: 126701	C(q) (1/4/89)	Hepatocellular adenomas (by pair-wise comparison & with a dose- related trend); Han-Wistar rats (M & F).	5.3 E-2 (2/3)	Deferred
Oxamyl (Vydate) CAS No. 23135-22-0 EPA Chem Code: 103801	E (11/5/96)			

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Oxydemeton-methyl CAS No. 301-12-2 EPA Chem Code: 058702	Not likely (7/24/97)			
Oxyfluorfen (Goal) CAS No. 42874-03-3 EPA Chem Code: 111601	C(q) (9/29/89)	Liver (adenomas, carcinomas & combined adenomas and/or carcinomas); CD-1 mice (M).	7.32 E-2 (3/4)	
Oxytetracycline CAS No. 2058-46-0 EPA Chem Code: 006308	D (12/4/92)			
Oxythioquinox (Morestan) CAS No. 2439-01-2 EPA Chem Code: 054101	B2 (2/15/96)	Lung tumors; NMRI mice (M). Hepatocellular tumors (M & F) and rare kidney tumors (F); F344 rats. Data showing chemical has clastogenic activity provided additional support.	3.42 E-2 (3/4)	
Comments: HCPRC recommended for the purpose of risk characterization, a low dose extrapolation (Q1*) model be applied to animal data for the quantification of human risk, based on total kidney tumors (combined adenoma/carcinoma).				
Paclobutrazol CAS No. 76738-62-0 EPA Chem Code: 125601	D (6/23/94)	Benign stromal polyps (F); Leydig cell tumors (M); Sprague-Dawley CrI:CD(SD)BR rats.		
Comments: The RFDC noted that new carcinogenicity studies may be required if the current use pattern changes (i.e. food uses or uses which are in the high exposure category & require carcinogenicity data).				
Paradichlorobenzene CAS No. 106-46-7 EPA Chem Code: 061501	C (4/27/89)	Liver (adenomas and carcinomas); B6C3F1 mice (M & F).		
Paranitrophenol CAS No. 100-02-7 EPA Chem Code: 056301	D (5/14/96)			
Comments: Classification based on inadequacy of the data base, i.e. lack of carcinogenicity data in a second animal species.				
Paraquat dichloride CAS No. 1910-42-5 EPA Chem Code: 061601	E (7/28/88)			C
Comments: OPP to reevaluate when new data on powdered diet are submitted. SAP concerned with nasal squamous cell carcinoma seen in Fischer 344 rats (M).				
Parathion (Ethyl parathion) CAS No. 56-38-2 EPA Chem Code: 057501	C (9/11/91)	Adrenal cortical tumors (adenomas + carcinomas; Thyroid follicular cell adenomas & pancreatic cell carcinomas; Osborne-Mendel rat (M) Benign pancreatic tumors; Wistar rat (M)		C
Comments: The Committee concluded that Parathion be classified as a Group C without quantification, which is to say without the use of a low dose extrapolation model (Q1*) for quantitative risk assessment; instead a Reference Dose (RfD) approach will be used.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Pebulate CAS No. 1114-71-2 EPA Chem Code: 041403	Not likely (12/7/98)			
Pendimethalin CAS No. 40487-42-1 EPA Chem Code: 108501	C (7/24/92)	Thyroid follicular cell adenomas; Sprague-Dawley rats (M & F).		
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) approach should be used for quantification of human risk.				
Pentachloronitrobenzene CAS No. 82-68-8 EPA Chem Code: 056502	C (12/18/92)	Thyroid follicular cell adenomas (by both pair-wise and trend analysis) in males with a positive trend in females; CD rats.		
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) approach should be used for quantification of human risk. [Syn. PCNB]				
Pentachlorophenol CAS No. 87-86-5 EPA Chem Code: 063001	B2 (1/3/91)	Hepatocellular adenomas & carcinomas, adrenal medulla pheochromocytomas & malignant pheochromocytomas, &/or hemangiosarcomas & hemangiomas in one or both sexes of B6C3F1 mice.	1.29 E-1 (2/3)	B2
Comments: CRAVE Q* = 1.2 E-1 (0).				
Permethrin CAS No. 52645-53-1 EPA Chem Code: 109701	C(q) (9/18/89)	Lung (adenomas & combined adenomas/carcinoma); Liver (adenoma); CD-1 mice (F).	1.84 E-2 (2/3)	Pending
Phenmedipham (Betanal) CAS No. 13684-63-4 EPA Chem Code: 098701	D (4/28/93)			
Comments: RFDC considered the dose levels in both carcinogenicity studies (rat & mouse) to be inadequate.				
Phenol CAS No. 108-95-2 EPA Chem Code: 064001	D (CRAVE) (8/2/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Phorate (Thimet) CAS No. 298-02-2 EPA Chem Code: 057201	E (12/30/93)			
Comments: OPP requests a 90-day study in mice to determine whether the doses in the mouse carcinogenicity study would inhibit ChE in plasma, RBC or brain or cause other toxic effects.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Phosmet (Imidan) CAS No. 732-11-6 EPA Chem Code: 059201	Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential (10/27/99)	Increase (both trend & pair-wise) in combined liver adenomas/carcinomas in male B6C3F1 mice but only trends for increase of liver adenomas/carcinomas & mammary adenocarcinomas in female B6C3F1 mice. There was no evidence of carcinogenicity in an acceptable study in Charles River rats.		
Comments: Because there is low confidence that there is a potential cancer risk to humans, the Committee recommended that quantification using the tumor data is not warranted.				
Phosphamidon CAS No. 13171-21-6 EPA Chem Code: 018201	C (5/31/89)	Bladder transitional cell carcinoma; Hepatocellular carcinoma; Sprague-Dawley rats (M).		
Comments: Quantification of oncogenicity risk was not recommended since the evidence is limited & the oncogenic response was confined to one sex of one strain of one species. Furthermore, the increase in the incidence of tumors were not statistically significant by pairwise comparison.				
Phosphine CAS No. 7803-51-2 EPA Chem Code: 066500	D (CRAVE) (3/31/92)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate data in animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Phostebupirim (Bay mat 7484) CAS No. 96182-53-5 EPA Chem Code: 129806	E (4/27/97)			
Picloram (+ salts) CAS No. 1918-02-1 EPA Chem Code: 005101	E (4/1/94)			
Piperonyl butoxide CAS No. 51-03-6 EPA Chem Code: 067501	C (6/7/95)	Increased incidence of hepatocellular tumors (M & F) (adenomas, carcinomas, combined adenomas/carcinomas in M and adenomas in F; CD-1 mice		
Comments: HCPRC recommended that for the purpose of risk characterization, the Reference Dose (RfD) approach should be used for quantitation of human risk.				
Pirimiphos-methyl CAS No. 29232-93-7 EPA Chem Code: 108102	Can not be determined (1/29/98)			
Comments: HIARC concluded that the carcinogenic potential of Pirimiphos-methyl can not be determined due to the lack of an acceptable carcinogenicity study in rats.				
Polychlorinated biphenyls CAS No. 1336-36-3 EPA Chem Code: 017801	B2 (CRAVE) (4/22/87)	Hepatocellular carcinomas; Fischer 344, Sprague-Dawley & Wistar rat; dd & BALB/cJ mice. Inadequate yet suggestive evidence of excess risk of liver cancer in humans by ingestion, inhalation or dermal contact.	7.7 E+0	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				



CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRATE CLASS
Prallethrin (ETOC) CAS No. 23031-36-91 EPA Chem Code: 128772	Not likely (9/28/99)			
Primisulfuron-methyl CAS No. 86209-51-0 EPA Chem Code: 128973	D (5/3/90)	Hepatocellular adenomas & carcinomas; CD-1 mice (M & F). [The two dose levels where these tumors occurred were excessively toxic]		
Comments: HCPRC did not recommend to repeat the mouse study. [Syn. Beacon].				
Prochloraz CAS No. 67747-09-5 EPA Chem Code: 128851	C(q) (7/1/88)	Hepatocellular adenoma & carcinoma, combined adenoma/carcinoma; CD-1 (M & F).	1.5 E-1 (2/3)	C
Procymidone (Sumilex) CAS No. 32809-16-8 EPA Chem Code: 129044	B2 (4/5/91)	Interstitial cell adenoma (M); Pituitary adenoma (F); Osborne-Mendel rats. Liver adenomas & combined adenomas/carcinomas; B6C3F1 mice (F). Additionally, a rare variant of hepatocellular carcinoma, hepatoblastoma, had a significant increasing trend in M B6C3F1 mice.	2.35 E-2 (2/3) 1.92 E-2 (2/3)	
Comments: For the purpose of risk characterization, a low dose extrapolation model applied to the experimental animal tumor data was recommended for quantification of human risk (Q1*). A quantification of risk is recommended for the testicular tumors in male rats and for the liver tumors in female mice. The Q1* values are based on female mouse & male rat, respectively.				
Prodiamine (Rydex) CAS No. 29091-21-2 EPA Chem Code: 110201	C (7/15/91)	Thyroid follicular cell neoplasia; Pancreatic adenomas; Sprague-Dawley rats (M & F). Fibrosarcomas; CD-1 mice (M).		
Comments: HCPRC recommended for the purpose of risk characterization that the Reference Dose (RfD) approach should be used for quantification of human risk. The recommendation to use the RfD approach was based upon several factors including the absence of genotoxicity, the nature of the response (benign thyroid follicular cell tumors), and the lack of clear neoplastic response at sites other than the thyroid.				
Profenofos (Curacron) CAS No. 41198-08-7 EPA Chem Code: 111401	E (2/6/95)			
Prometon CAS No. 1610-18-0 EPA Chem Code: 080804	D (9/17/92)	Mammary tumor; Sprague-Dawley rats (F)		
Prometryn CAS No. 7287-19-6 EPA Chem Code: 080805	E (7/25/94)			
Pronamide (Kerb) CAS No. 23950-58-5 EPA Chem Code: 101701	B2 (5/26/93)	Benign testicular interstitial cell tumors (M); Uncommon thyroid follicular cell adenomas (M&F); Crl:CD(SD)BR rats. Hepatocellular carcinomas; B6C3F1 mice (M).	1.54 E-2 (2/3)	
Comments: Q1* will be based on the incidence of liver tumors.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRABE CLASS
Propachlor CAS No. 1918-16-7 EPA Chem Code: 019101	Likely (10/16/97)	Multiple tumors/multiple sites; Rare stomach tumor; Fischer 344 rat (M); Thyroid tumors & granulosa/theca cell tumors; Sprague-Dawley rats (M & F). Hepatocellular tumors; CD-1 mice (M).		
Comments: A linear low-dose approach (Q1*) for human risk characterization & extrapolation of risk should be based on both neoplastic [ovarian tumors (rats) & liver tumors (M mice)] & non-neoplastic liver hypertrophy (mice) lesions.				
Propamocarb hydrochloride CAS No. 25606-41-1 EPA Chem Code: 119302	D (4/19/95)			
Comments: RFDC considered the carcinogenicity phase of the rat study to be unacceptable. The mouse carcinogenicity study was also considered unacceptable.				
Propargite (Omite) CAS No. 2312-35-8 EPA Chem Code: 097601	B2 (7/23/92)	Statistically significant increases in undifferentiated sarcomas in the jejunum; Crl:CDR rat (M & F).	2.01 E-1 (3/4)	
Comments: HCPRC determined the mouse carcinogenicity study to be inadequate. However a new study is not required.				
Propazine CAS No. 139-40-2 EPA Chem Code: 080808	C(q) (5/8/97)	Statistically significant increases in mammary gland adenomas, carcinomas and combined adenomas/carcinomas; Sprague-Dawley rat (F).	4.45 E-2 (3/4)	
Comments: HCPRC recommended that for the purpose of risk characterization a low-dose extrapolation methodology (Q1*) be applied to the animal data.				
Propetamphos CAS No. 31218-83-4 EPA Chem Code: 113601	Not likely (12/2/98)			
Propiconazole (Banner/Tilt) CAS No. 60207-90-1 EPA Chem Code: 122101	C (9/14/92)	Hepatocellular adenomas, carcinomas, & adenomas/carcinomas combined; CD-1 mice (M).	1.79 E-2 (3/4)	Pending
Comments: For the purpose of risk characterization HCPRC recommended that the Reference Dose approach should be used for quantification of human risk. This decision was based on the new data submitted (90 day studies) which showed excessive toxicity at the high dose (2500 ppm); however, the middle dose (500 ppm) was not considered sufficiently high for assessing the carcinogenic potential of Propiconazole.				
Propylene oxide CAS No. 75-56-9 EPA Chem Code: 042501	B2 (CRABE) (4/5/90)	Benign & malignant tumors at the site of exposure when exposed by subcutaneous injections (NMRI mice), by inhalation (F344/N, CpB:WU Wistar rats & B6C3F1 mice) & by gavage (Sprague-Dawley rats).	2.4 E-1 (0) 3.7 E-6 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Prosulfuron (CGA-152005) CAS No. 94125-34-5 EPA Chem Code: 129031	D (4/20/95)	Mammary gland adenomas & adenocarcinomas (F); Interstitial cell tumors (M); Crl:CD(SD)BR rats.		

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Pymetrozine CAS No. 123312-89-0 EPA Chem Code: 101103	Likely to be carcinogenic to humans (8/24/99)	Liver tumors- Hepatomas and combined adenomas and/or carcinomas; Tif:RAIf(SPF) Sprague-Dawley rats (F). Liver carcinomas and combined hepatomas and/or carcinomas; Tif:MAGf(SPF) mice (M & F).	1.19 E-2 (3/4)	
Comments: For the extrapolation of risk to humans, the Committee recommended using the linear low-dose (Q1*) approach based on liver tumors by the oral route. The Committee also noted that the metabolites of Pymetrozine could be potentially carcinogenic since they are benzaldehyde or hydrazides.				
Pyrethrins CAS No. 121-21-1 EPA Chem Code: 069001	Likely to be a human carcinogen by the oral route (4/8/99)	Liver tumors (F); Thyroid tumors (M & F); Charles River CD rats	5.14 E-3 (3/4)	
Comments: The Committee recommended a linear low-dose approach for human risk characterization. For the linear low-dose (Q1*) approach, extrapolation of risk should be based on the most potent Q1* value of the two tumor types. This extrapolation is supported by the lack of data on the mode of action for tumor induction.				
Pyridaben CAS No. 96489-71-3 EPA Chem Code: 129105	E (5/11/94)			
Pyrimethanil CAS No. 53112-28-0 EPA Chem Code: 288201	C (2/12/97)	Thyroid follicular cell adenomas & combined adenoma/carcinoma (M); Thyroid cell adenomas (F); Sprague-Dawley rats.		
Comments: HCPRC recommended that a MOE methodology be used for the estimation of human risk. The MOE methodology was selected because the thyroid tumors associated with administration of Pyrimethanil in Sprague-Dawley rats may be due to a disruption in the thyroid-pituitary status.				
Pyriproxyfen (Sumilarv) CAS No. 95737-68-1 EPA Chem Code: 129032	E (9/15/95)			
Pyriithiobac-sodium CAS No. 123343-16-8 EPA Chem Code: 078905	C(q) (9/5/95)	Liver adenomas, carcinomas & combined adenoma/carcinoma; CD-1 mice (M). Rare kidney tubular adenomas, carcinomas & combined adenoma/carcinoma; Crl:CDBR rats.	1.05 E-3 (3/4) 1.25 E-2 (3/4)	
Comments: The HCPRC recommended a low-dose extrapolation model be applied to the animal data for the quantification of human risk (Q1*), for both the combined liver tumors in the male mouse (second Q1* value) and the combined kidney tumors in the male rat (first Q1* value).				
Quinclorac (Facet) CAS No. 84087-01-4 EPA Chem Code: 128974	D (8/26/92)	Equivocal increase in pancreatic acinar cell adenomas; Wistar rats (M).		
Quizalofop ethyl (Assure) CAS No. 76578-14-8 EPA Chem Code: 128201	D (3/17/88)	Liver (adenomas & carcinomas combined); CD-1 mice (M).		D
Comments: HCPRC concluded that limitations in the data from the mouse study precluded an accurate interpretation of carcinogenic risk. No new animals studies are required.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Rimsulfuron (DPX-E9636) CAS No. 122931-48-0 EPA Chem Code: 129009	E (12/9/93)			
Rotenone CAS No. 83-79-4 EPA Chem Code: 071003	E (10/5/88)			Deferred
Selenium and compounds CAS No. 7782-49-2 EPA Chem Code: 072001	D (CRAVE) (3/7/90)			D
Comments: Assessment based on inadequate human data & inadequate evidence of carcinogenicity in animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Silver CAS No. 7440-22-4 EPA Chem Code: 072501	D (CRAVE) (9/22/88)	In animals, local sarcomas have been induced after implantation of foils & discs silver. Interpretation of these findings has been questions due to the phenomenon of solid-state carcinogenesis.		D
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Silvex (2,4,5-TP) CAS No. 93-72-1 EPA Chem Code: 082501	D (CRAVE) (12/2/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical. [Syn. Trichlorophenoxypropionic acid, 2,4,5-]				
Simazine CAS No. 122-34-9 EPA Chem Code: 080807	C(q) (5/24/90)	Pituitary gland carcinomas; Mammary gland carcinomas; Sprague-Dawley rats (F).	1.2 E-1 (2/3)	Pending
Sodium omadine CAS No. 15922-78-8 EPA Chem Code: 088004	D (5/16/95)			
Comments: RFDC considered the mouse study to be inadequate.				
Spinosad (XDE-105) CAS No. 131929-60-7 EPA Chem Code: 110003	Not likely (6/17/97)			
Sulfentrazone CAS No. 122836-35-5 EPA Chem Code: 129081	E (5/7/96)			

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Sulfosate CAS No. 81591-81-3 EPA Chem Code: 128501	E (7/26/94)			
Sulfosulfuron [MON 31500] CAS No. 141776-32-1 EPA Chem Code: 085601	Likely (10/28/98)	Rare transitional cell papilloma & carcinoma of the urinary bladder in females; Sprague-Dawley rats. Rare mesenchymal tumors of the urinary bladder in male as well as renal adenomas in male and female mice; CD-1	1.03 E-3 (3/4)	
Comments: The Committee recommended that a linear low-dose approach (Q1*) for human risk characterization and extrapolation of risk should be based on the incidence of benign mesenchymal tumors in male mice. This extrapolation, rather than an MOE approach, is warranted due to lack of data on mode of action.				
Sulprofos (Merafos/Bolstar) CAS No. 35400-43-2 EPA Chem Code: 111501	E (3/26/96)			
TCMTB (Busan 72) CAS No. 21564-17-0 EPA Chem Code: 035603	C (8/28/96)	Testicular interstitial cell adenomas (M); Thyroid c-cell adenomas (F); Sprague-Dawley rats.		
Comments: HCPRC recommended that for the purpose of risk characterization, the RfD approach should be used for quantitation of human risk.				
Tebuconazole (Folicur) CAS No. 107534-96-3 EPA Chem Code: 128997	C (9/15/93)	Statistically significant increase in the incidence of hepatocellular adenomas, carcinomas & combined adenomas/carcinomas both by positive trend & pairwise comparisons; NMRI mice (M & F).		
Comments: HCPRC recommended that for the purpose of risk characterization the Reference Dose (RfD) approach should be used for quantification of human risk.				
Tebufenozide CAS No. 5902-51-2 EPA Chem Code: 129026	E (8/29/94)			
Tebuthiuron CAS No. 34014-18-1 EPA Chem Code: 105501	D (3/1/91)			
Comments: RFDC considered the two mouse studies to be of supplementary nature. Dose levels were inadequate for carcinogenicity testing; however tumor profile was not altered. A new study is not considered necessary at this time.				
Terbacil CAS No. 5902-51-2 EPA Chem Code: 012701	E (9/30/94)			
Terbufos CAS No. 13071-79-9 EPA Chem Code: 105001	E (2/1/94)			

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Terbutylazine CAS No. 5915-41-3 EPA Chem Code: 080814	D (8/24/94)	Benign interstitial cell tumors of the testes (M), mammary gland carcinomas (F); Tif:RAIF rats.		
Comments: Assessment based on statistically significant increases in tumors in the rat, only at a dose which the HCPRC considered excessively toxic, but which were the same tumor types induced by closely related analogs.				
Terbutryn CAS No. 886-50-0 EPA Chem Code: 080813	C (3/3/88)	Mammary (adenomas/adenocarcinomas); Liver (adenomas/carcinomas) (F); Thyroid follicular (adenomas/carcinomas); Testicular interstitial cell adenoma (M); CR CD-1 mice.		
Terrazole CAS No. 2593-15-9 EPA Chem Code: 084701	B2 (1/9/91)	Multiple tumors (liver, bile duct, mammary gland, thyroid & testes) & cholangiocarcinoma (a rare tumor); Sprague-Dawley rats (M & F).	7.2 E-2 (M)	
Tetrachloroethane, 1,1,2,2- CAS No. 79-34-5 EPA Chem Code: 078601	C (CRAVE) (6/26/86)	Hepatocellular carcinomas; B6C3F1 mice (M & F).	2.0 E-1 (0) 5.8 E-5 (1)	C
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Tetrachlorvinphos (Gardona) CAS No. 961-11-5 EPA Chem Code: 083701	C(q) (3/6/95)	Hepatocellular carcinomas & combined adenomas/carcinomas; B6C3F1 mice (F). Thyroid C-cell adenomas & adrenal pheochromocytomas; Sprague-Dawley rats (M).	1.83 E-3 (3/4)	
Tetraconazole CAS No. 112281-77-3 EPA Chem Code: 120603	Likely to be carcinogenic to humans (1/11/00)	Hepatocellular adenomas, carcinomas and combined adenomas/carcinomas in both sexes; Crl:CD-1 (ICR) mice	2.30 E-2 (3/4)	
Comments: For the quantification of human cancer risk, the Committee recommended a linear low-dose extrapolation (Q1*) approach based on the incidence of combined liver tumors in male or female mice, whichever is more potent. This approach is supported by the lack of confirmation of the mode of action of Tetraconazole.				
Tetramethrin CAS No. 7696-12-0 EPA Chem Code: 069003	C (12/11/89)	Interstitial cell adenomas in the testes (M); CR CD-1 & CRCD Sprague-Dawley, Long-Evans Hooded rats.		
Comments: Quantitative estimation of potential human risk was not recommended.				
Thallium(I) sulfate CAS No. 7446-18-6 EPA Chem Code: 080001	D (CRAVE) (11/8/89)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Thiabendazole CAS No. 148-79-8 EPA Chem Code: 060101	Likely to be carcinogenic to humans (2/24/00)	Thyroid follicular cell adenomas and combined adenomas/carcinomas; Sprague-Dawley Crl:CD BR rats	1.15 E-2 (3/4)	
Comments: CARC recommended an MOE approach for the quantification of human cancer risk. This extrapolation is supported by the weight-of-the evidence which suggests that Thiabendazole may interfere with thyroid-pituitary homeostasis. Children are not expected to be more susceptible than adults to Thiabendazole-induced thyroid cancer.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Thiafluamide (FOE 5043) CAS No. 142459-58-3 EPA Chem Code: 121903	Not likely (7/16/97)			
Thiamethoxam CAS No. 153719-23-4 EPA Chem Code: 060109	Likely to be carcinogenic to humans (6/20/00)	Benign and malignant hepatocellular tumors in both sexes of Tif:MAG(SPF) mice	3.77 E-2 (3/4)	
Comments: Although no tumors were observed in rats, a hepatocarcinogenic response cannot be ruled out because the animals were not tested at higher dose levels. The CARC recommended a linear low-dose extrapolation (Q1*) approach for the quantification of human cancer risk based on the most potent of the liver tumor response observed in mice. This approach is supported by the lack of confirmation of the mode of action of thiamethoxam.				
Thiazopyr (MON 13200) CAS No. 117718-60-2 EPA Chem Code: 129100	C (5/25/94)	Statistically significant increase in thyroid follicular cell tumors (M). Increases in renal tubular adenomas (M & F); however statistically significant positive trend in F only; Sprague-Dawley rats.		
Comments: HCPRC recommended that for the purpose of risk characterization a Margin of Exposure (MOE) approach should be used for evaluation of the consequences of human exposure.				
Thiobencarb (Bolero) CAS No. 28249-77-6 EPA Chem Code: 108401	D (6/10/96)	Adenomas & carcinomas of the thymic gland; B6C3F1 mice (F).		
Comments: RFDC concluded that the chemical should be classified Group D based on the possible potential of carcinogenic response which could not be ascertained or dismissed using the existing mouse data.				
Thiodicarb (Larvin) CAS No. 59669-26-0 EPA Chem Code: 114501	B2 (6/10/96)	Liver tumors (malignant & benign); CD-1 mice (M & F). Testicular interstitial cell tumors; Sprague-Dawley rat (M).	1.88 E-2 (3/4)	
Comments: HCPRC recommended that for the purpose of risk characterization, a Margin of Exposure (MOE) methodology be used for the estimation of human risk, based on hepatocellular combined adenoma/carcinoma in male mice.				
Thiophanate-methyl CAS No. 23564-05-8 EPA Chem Code: 102001	Likely to be carcinogenic to humans (8/24/99)	Hepatocellular adenomas (M & F); Combined adenomas, carcinomas and/or hepatoblastomas (M); CD-1 mice. Thyroid follicular cell adenomas (M & F); Thyroid follicular cell carcinomas as well as combined adenomas and/or carcinomas (M); F344 rats.	1.38 E-2 (3/4)	
Comments: For human risk characterization, CARC recommended the extrapolation of risk using the linear low-dose (Q1*) default approach for liver tumors. This extrapolation was supported by the lack of confirmation of the mode of action, concern for mutagenicity & dose-dependent increases in the incidence of liver tumors in male and female mice.				
Toluene CAS No. 108-88-3 EPA Chem Code: 080601	D (CRAVE) (9/15/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Toxaphene (Campechlor) CAS No. 8001-35-2 EPA Chem Code: 080501	B2 (CRAVE) (3/5/87)	Hepatocellular carcinomas & neoplastic nodules (adenomas); B6C3F1 B6C3F1 mice (M & F). Thyroid tumors (adenomas & carcinomas); Osborne-Mendel rats (M & F).	1.1 E+0 (0) 3.2 E-4 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Tralkoxydim CAS No. 87820-88-0 EPA Chem Code: 121000	Likely (10/22/98)	Benign Leydig cell tumors at all dose levels with the incidences at the high dose exceeding the concurrent & historical control; Wistar rats (M).	1.68 E-2 (3/4)	
Comments: Committee recommended that a linear low-dose (Q1*) for human risk characterization & extrapolation of risk should be based on the occurrence of Leydig cell tumors of the testes in male rats at all dose levels.				
Triadimefon (Bayleton) CAS No. 43121-43-3 EPA Chem Code: 109901	C (12/4/96)	Borderline statistically significant increase thyroid adenomas; Wistar rats (M). Hepatocellular adenomas; NMRI mice (M & F).		
Comments: HCPRC concluded that for the purpose of risk characterization, the RfD approach should be used for quantification of human risk.				
Triadimenol (Baytan) CAS No. 55219-65-3 EPA Chem Code: 127201	C (1/29/88)	Liver (hepatocellular adenomas); CF1/W74 mice (F).		
Triallate CAS No. 2303-17-5 EPA Chem Code: 078802	C(q) (1/12/94)	Hepatocellular carcinomas (M); Positive trend & a borderline significant increase in these tumors in females; B6C3F1 mice. Increased incidence of renal tubular cell adenoma (rare tumor type); Sprague-Dawley rat (M) [Considered biologically significant although no absolute pair-wise statistical significance was found].	7.17 E-2 (3/4)	
Comments: HCPRC requested that the female mouse carcinogenicity study be repeated because the dosing was inadequate; the results are considered critical to the ultimate classification of Triallate. If the Registrant chooses to repeat the study, the decision on quantification risk will be deferred until completion & evaluation of the new study. However, if the Registrant decides not to repeat the study, the existing low dose extrapolation (Q1*) based on the tumor data in the male mouse will be applied.				
Triasulfuron (Amber) CAS No. 82097-50-5 EPA Chem Code: 128985	E (3/11/91)			
Tribenuron methyl (Express) CAS No. 101200-48-0 EPA Chem Code: 128887	C (7/14/89)	Mammary gland adenocarcinomas; Sprague-Dawley rats (F).		Pending
Comments: The oncogenic response observed may be associated with a hormonal imbalance that may not occur at doses below an MTD. HCPRC concluded that a quantitative risk assessment is not appropriate because the increased incidence of mammary gland tumors was observed in female rats treated at dose levels exceeding the MTD, there was no evidence of genetic toxicity shown in several studies, and structural analogs of Express (other than Atrazine) were not associated with oncogenic responses in rats and mice.				



CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRABE CLASS
Tribufos (Tribuphos/DEF) CAS No. 78-48-8 EPA Chem Code: 074801	Likely (high doses); Not likely (low doses) (5/22/97)	Liver (hemangiosarcoma) (M), Lung (alveolar/bronchiolar adenoma) (F), Small intestine (adenocarcinoma) (M & F); CD-1 mice.	8.38 E-2 (3/4)	
Comments: A non-linear approach (MOE) using the most sensitive toxic endpoint considering all species tested was recommended for the purpose of risk characterization.				
Trichlorfon (Trichlorophon) CAS No. 52-68-6 EPA Chem Code: 057901	Likely (high doses), Not likely (low doses) (7/15/99)	Tumors of the kidneys (adenomas) in male F344 rats & tumors of the lungs in both sexes (adenomas/carcinomas in M; carcinomas in F). Mammary tumors in female CD-1 mice.		
Comments: Tumors in rats and mice were observed at dose levels that were considered excessively toxic (Rats: increased mortality, ChE inhibition, non-neoplastic histo- pathological changes; Mice: increased mortality and ChE inhibition). None of the tumors was considered to be relevant for human risk assessment because they were seen only at doses that were excessively toxic.				
Trichlorobenzene, 1,2,4- CAS No. 120-82-1 EPA Chem Code: 081101	D (CRABE) (10/19/88)			D
Comments: Assessment based in lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Trichloroethane, 1,1,1- CAS No. 71-55-6 EPA Chem Code: 081201	D (CRABE) (8/5/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Trichloroethane, 1,1,2- CAS No. 79-00-5 EPA Chem Code: 081203	C (CRABE) (7/26/86)	Hepatocellular carcinomas (M & F) and pheochromocytomas (F); B6C3F1 mice.	5.7 E-2 (0) 1.6 E-5 (1)	C
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Trichlorophenol, 2,4,6- CAS No. 88-06-2 EPA Chem Code: 064212	B2 (CRABE) (9/7/89)	Lymphomas or leukemias; F344 rats (M). Hepatocellular adenomas or or carcinomas; B6C3F1 mice (M & F).	1.1 E-2 (0) 3.1 E-6 (1)	B2
Comments: This assessment is located on IRIS. OPP has not reviewed this chemical.				
Triclopyr (salts & esters) CAS No. 55335-06-3 EPA Chem Code: 116001	D (5/8/96)	Classification based on increases in mammary tumors in rats (Fischer 344) & mice (Jcl:ICR), and adrenal pheochromocytomas in male rats, which the majority of the HCPRC believed to be only marginal.		
Triclosan (Irgasan) CAS No. 3380-34-5 EPA Chem Code: 054901	Not classifiable (10/22/98)			
Comments: The Committee was unable to assign a carcinogenicity classification to Triclosan, due to the lack of a second study in a second species.				

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
Tridiphane (Tandem) CAS No. 58138-08-2 EPA Chem Code: 123901	C (4/22/86)	Liver (hepatocellular adenomas, adenomas/carcinomas combined); B6C3F1 mice (F).		
Triflumizole CAS No. 08694-11-1 EPA Chem Code: 128879	E (8/10/93)			
Trifluralin (Treflan) CAS No. 1582-09-8 EPA Chem Code: 036101	C(q) (11/29/89)	Thyroid (follicular cell adenomas & carcinomas); Neoplasms of the renal pelvis (M); Benign urinary bladder tumors (F); Fischer 344 rats.	7.7 E-3 (2/3)	C
Comments: CRAVE Q* = 7.7 E-3				
Triflusulfuron-methyl CAS No. 126535-15-7 EPA Chem Code: 129002	C (5/28/96)	Testicular interstitial cell adenomas; CD-1 rat (M).		
Comments: HCPRC recommended that for the purpose of risk characterization, the Reference Dose (RfD) approach should be used for quantitation of human risk.				
Triphenyltin hydroxide CAS No. 76-87-9 EPA Chem Code: 083601	B2 (5/24/90)	Pituitary gland adenoma (F); Leydig cell tumors (M); Wistar rat. Hepatocellular adenomas (M & F); combined hepatocellular (adenomas and/or carcinoma) (F); NMRI mice.	1.83 E+0 (3/4)	
Troysan polyphase (IPBC) CAS No. 55406-53-6 EPA Chem Code: 107801	Not likely (12/04/96)			
UDMH CAS No. 57-14-7 EPA Chem Code: 600018	B2 (7/26/91)	Multiple sites (eg. lungs, vessels, liver & kidney); Multiple species, strains & studies.	4.6 E-1 (2/3) (M) 3.1 E-1 (2/3) (F)	
Comments: UDMH is the metabolite/breakdown product of Daminozide (Alar). [Syn. unsymmetrical 1,1-dimethylhydrazine]				
UMP-488 (PAL 6000) CAS No. 111578-32-6 EPA Chem Code: 129025	E (5/6/94)			
Uniconazole (Prunit) CAS No. 83657-22-1 EPA Chem Code: 128976	C (10/11/90)	Hepatocellular adenomas, carcinomas & adenomas/carcinomas combined; CD-1 mice (M).		
Comments: Quantification of potential human cancer risk, using the low dose extrapolation model (Q1*) was not recommended. Therefore, the Reference Dose (RfD) approach will be used for the quantification of potential human risk.				
Vinclozolin CAS No. 50471-44-8 EPA Chem Code: 113201	C (6/20/00)	Leydig cell adenomas; Wistar rats (M)	2.9 E-1 (3/4)	

Comments: From the CARC meeting of 4/19/00: Based on the review of available data, the CARC concluded that infants, children & adults would be protected from Vinclozolin induced testicular Leydig cell tumors through a non-linear assessment with a POD of 3 mg/kg/day & a MOE approach. The CARC determined that the mode of action for Vinclozolin related antiandrogenic effects in infants, children & adults is mediated via inhibition of androgen receptors.

CHEMICAL	CURRENT OPP CLASSIFICATION AND DATE OF CLASSIFICATION	TUMOR TYPE / SPECIES	POTENCY Q* VALUE	CRAVE CLASS
White phosphorus CAS No. 7723-14-0 EPA Chem Code: 066502	D (CRAVE) (6/15/90)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans or animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Xylenes CAS No. 1330-20-7 EPA Chem Code: 086802	D (CRAVE) (12/2/87)			D
Comments: Assessment based on lack of data concerning carcinogenicity in humans & inadequate animal data. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Zinc and compounds CAS No. 7440-66-6 EPA Chem Code: 129015	D (CRAVE) (6/15/90)			D
Comments: Assessment based on inadequate evidence in humans & animals. This assessment is located on IRIS. OPP has not reviewed this chemical.				
Ziram CAS No. 137-30-4 EPA Chem Code: 034805	Likely to be carcinogenic to humans (4/6/00)	C-cell thyroic tumors and hemangiomas; F344 & CD rats (M) Alveolar/bronchiolar adenomas & combined adenomas/carcinomas; B6C3F1 mice (F)	6.11 E-2 (3/4)	
Comments: CARC recommended a linear low-dose extrapolation (Q1*) approach for the quantification of human cancer risk based on C-cell thyroid tumors in male F344 rats. This approach is supported by the findings of benign lung tumors in female mice, lack of mode of action data, and the mutagenicity evidence of Ziram.				